

Regulatory Impact Analysis for the Proposed Reclassification of Major Sources as Area Sources under Section 112 of the Clean Air Act

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1. EXECUTIVE SUMMARY

1.1 Summary

This Regulatory Impact Analysis (RIA) examines the benefits, costs, and economic impacts of the proposed rulemaking titled “Reclassification of Major Sources as Area Sources under Section 112 of Clean Air Act” (also known as Major MACT to Area (MM2A) rule). The MM2A rule implements the plain language reading of the Clean Air Act (CAA) section 112 definitions of “major” and “area” source and allows major sources to reclassify to area source status at such time the source takes enforceable limits on its potential to emit (PTE) hazardous air pollutants (HAP) below the major source thresholds.

Section 112 of the CAA distinguishes between major and area sources of HAP emissions. Major sources are larger sources of air emissions than area sources and, generally, different requirements apply to major sources and area sources.¹ Whether a source is a “major source” or an “area source” depends on the amount of HAP emitted by the source based on its actual or potential emissions. Section 112 of the CAA defined “major source” to mean a source that emits or has the potential to emit at or above either of the statutory thresholds of 10 tons per year (tpy) of any one HAP or 25 tpy of total HAP according to CAA section 112(a)(1). An “area source” is defined as any source that is not a major source according to CAA section 112(a)(2). If a source does not emit or does not have the potential to emit at or above either of the major source thresholds, then it is an “area source.”

Shortly after the EPA began implementing individual National Emission Standards for Hazardous Air Pollutants (NESHAP) resulting from the 1990 CAA Amendments, the Agency received multiple requests to clarify when a major source of HAP could avoid section 112 requirements applicable to major sources by taking enforceable limits on its PTE below the major source thresholds. In response, the EPA issued, on May 16, 1995, a memorandum from John Seitz, Director of the Office of Air Quality Planning and Standards, to the EPA regional air division directors (the 1995 Seitz Memorandum). In the 1995 Seitz Memorandum, the EPA

¹ For example, national emission standards for hazardous air pollutants (NESHAP) standards applicable to major sources of HAP are, with certain exceptions, emissions limits based on maximum available control technology (MACT) floor and/or beyond the floor analyses under CAA sections 112(d)(2) and (d)(3), while area sources may be subject to standards based on generally available control technology (GACT) standards rather than MACT standards, as provided in CAA section 112(d)(5).

stated its interpretation of the relevant statutory language that facilities that are major sources of HAP may switch to area source status at any time until the “first compliance date” of the standard. Under this interpretation, facilities that are major sources on the first substantive compliance date of an applicable major source NESHAP were required to comply permanently with that major source standard even if the source was subsequently to become an area source by limiting its PTE. This position was commonly referred to as the OIAI policy.

On January 25, 2018, the EPA issued a guidance memorandum from William L. Wehrum, Assistant Administrator of the Office of Air and Radiation, to the EPA regional air division directors titled “Reclassification of Major Sources as Area Sources Under Section 112 of the Clean Air Act” (MM2A Memorandum).² In the MM2A Memorandum, the EPA discussed the plain language of CAA section 112(a) regarding Congress’s definitions of “major source” and “area source,” and determined that the OIAI policy articulated in the 1995 Seitz Memorandum is contrary to the plain language of the CAA and, therefore, must be withdrawn. The EPA is now proposing regulatory text to implement the plain language reading of the statute as discussed in the MM2A Memorandum. Under the plain language of the statute, a major source that takes enforceable limits on its PTE to bring its HAP emissions below the CAA section 112 major source thresholds becomes an area source under the plain language of the statute, no matter when the source may choose to take enforceable measures to limit its PTE HAP emissions. That source, now having area source status, will not be subject to the CAA section 112 requirements applicable to the source as a major source under CAA section 112 – so long as the source’s actual and PTE HAP remains below the CAA section 112 thresholds – and will instead be subject to any applicable area source requirements. The decision of a major source facility to take enforceable limits on its PTE HAP emissions and reclassify to area source status is purely voluntary.

This RIA estimates the potential cost savings estimates associated with the reclassification of major sources as area sources under section 112 of the CAA. The potential cost savings are based on illustrative estimates of administrative burden reduction for sources that reclassify to area source status and are no longer subject to major source NESHAP requirements. The economic impacts are separate estimates from the estimates of cost savings

² See notice in 83 *FR* 5543, February 8, 2018.

and measure avoided cost to sales. The avoided costs included in the measurement of avoided cost-to-sales ratios are estimates of administrative burden reduction or cost savings. This RIA does not estimate any costs or cost savings related to control equipment changes (*e.g.*, decrease in control device operating and maintenance costs due to reduced device use), though it does provide analysis of the potential control costs for sources reducing HAP emissions in one instance. ³In place of a quantitative estimate of changes in emissions and benefits, the RIA provides a qualitative assessment of potential health and other benefits.

This RIA uses industry-level (six-digit North American Industry Classification System [NAICS] code) data and gauges the magnitude of the reduction in regulation for affected sources by comparing the avoided burden cost estimates to average industry revenues. The burden cost estimates are in annual terms (2014 and 2016 dollars), and the avoided annualized cost-to-sales ratios are calculated using average industry revenue and average industry revenue by entity size. The U.S. Small Business Administration small business size standards current list (as of October 1, 2017) is used to define a small entity. We note that this analysis approach in general was used for the RIA for the Final Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, a regulatory relief rule that was promulgated in 2010.⁴

1.2 Summary of Approach for the Analysis

This analysis examines three scenarios. The 2014 National Emissions Inventory (NEI) whole facility emissions along with source category modeling files were used to identify facilities with actual emissions below 75 percent of major source thresholds for HAP (U.S. EPA, 2016a). This 75 percent emissions cutoff at 7.5 tons per year (tpy) for one HAP and 18.75 tpy for all HAP defines the primary scenario in this analysis to calculate the cost savings and economic impact of rescinding the OIAI policy on various industry sectors. In addition, to comply with the Office of Management and Budget's (OMB's) Circular A-4 guidance that analysis of a regulation includes at least three scenarios (a primary scenario, and two alternatives: one more

³Memorandum. Larry Sorrels, US EPA/OAQPS/HEID/AEG to EPA Docket No. EPA-HQ-OAR-2019-0282.

“Analysis for Illustrative 125% Scenario for MM2A Proposal – Potential Cost Impacts from HAP Major Sources Reducing Emissions as part of Reclassifying to HAP Area Sources.” May, 2019.

⁴ The RIA is available at https://www3.epa.gov/ttn/ecas/docs/ria/permitting_ria_final-ghg-tailoring-rule_2010-05.pdf.

stringent and one less stringent)⁵. The two alternative scenarios examined in this report present: a 50% emissions cutoff and no-cutoff (125%) of major source thresholds. The 50% emissions cutoff is at 5 tpy of a single HAP or 12.5 tpy of all combined HAP. The 125% emissions cutoff is at 12.5 tpy of a single HAP or 31.25 tpy of all combined HAP.

Our analysis of the proposed MM2A rule includes several key elements:

- identification of HAP source categories expected to be affected by the proposed rule;
- identification of facilities for the 75% emissions cutoff scenario, which is the primary scenario for this analysis and for the two alternative scenarios;
- estimation of avoided ongoing labor burden;
- estimation of one-time permitting costs for the area source permits;
- estimation of area source burdens;
- estimation of cost savings;
- examination of potential control costs for some sources affected under the 125% scenario
- estimation of emissions impacts for some source categories;
- estimation of the economic impacts of this proposed rule; and
- benefits/disbenefits analysis.

A brief synopsis of these analytical aspects follows.

1.2.1 Baseline

The baseline for this proposed rulemaking is a state under which facilities that are major sources on the first substantive compliance date of an applicable major source NESHAP are required to comply permanently with that major source NESHAP requirements (OIAI policy). Under this no-action case baseline, a major source would continue to be major source even if the source was subsequently to become an area source by limiting its PTE. In contrast, the EPA is proposing that a major source can reclassify to area source status at any time by limiting its PTE HAP to below the major source thresholds of 10 tpy of any single HAP or 25 tpy of any

⁵ OMB's Circular A-4 is guidance that Federal agencies must follow to comply with Executive Order 12866, the basis for the content of regulatory impact analyses for rulemakings. This guidance is available at <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A4/a-4.pdf>, and p. 16 of Circular A-4 contains discussion on the development of regulatory alternatives.

combination of HAP. The implementation of the plain language reading of the statute, removes the time limitation imposed by the OIAI policy and, thus, provides potential regulatory relief for sources that choose to limit their PTE HAP emissions and reclassify from major to area source status. As described, the no-action case is the baseline for this RIA. All of the alternative scenarios analyzed in this RIA show the level of potential regulatory relief in comparison to a baseline in which the OIAI policy remains in effect.

1.2.2 Analytical Approach for Identifying Affected Sources and Calculating Cost Savings

The EPA conducted an illustrative cost analysis to determine the potential impacts of the removal of the OIAI policy. As part of this analysis, the EPA examined source categories subject to major source NESHAP under 40 CFR part 63. The EPA considered 110 source categories in the analysis. Of the 110 source categories, 71 were assessed using a direct approach, 35 were assessed using an extrapolated approach and 4 were assessed using approaches specific to those categories.

The EPA has completed Risk and Technology Review (RTR) modeling files for the 71 source categories assessed using a direct approach. Of these 71 source categories, 6 source categories would not be affected by the proposal and were not further analyzed. The remaining 65 categories examined under this approach were assessed using an approach based on administrative burden cost information from information collection requests (ICRs) for each source category NESHAP. For the 35 source categories that were analyzed using an extrapolated approach, the EPA does not have RTR modeling files. The EPA used cost information for the 71 source categories to estimate impacts for the 35 source categories without RTR modeling files. Also, three Industrial, Commercial and Institutional (ICI) Boilers and Process Heaters source categories and one Reciprocating Internal Combustion Engines (RICE) source category were assessed separately using approaches designed specifically for these categories. For a detailed description of how the EPA identified and assessed affected sources categories, please see the May, 2019 Cost Analysis Memorandum by the Eastern Research Group (ERG, 2019).

For the 65 source categories for which there are completed RTR modeling files, the EPA used the modeling files to calculate the total number of major source facilities in each source category. The EPA also used the RTR modeling files to estimate the number of facilities projected to obtain area source status per source category under the 75% emissions cutoff,

50% emissions cutoff, and 125% emissions cutoff scenarios. These scenarios are referred to in this RIA as the primary scenario, alternative scenario 1 and alternative scenario 2, respectively. For the 35 source categories for which EPA does not have RTR modeling files, the EPA used the Enforcement and Compliance History Online (ECHO) database to estimate the number of major source facilities. To estimate the number of facilities projected to obtain area source status for the 35 source categories, the EPA used 3-digit NAICS codes to match each extrapolated category to directly assessed source categories with RTR data. The May, 2019, ERG Cost Analysis Memorandum memo explains how the EPA calculated the number of major source facilities, the facilities projected to obtain area source status and the projected net cost savings per source category. The projected net cost savings are based on avoided supporting statement costs (avoided labor burden), permitting costs for area source permits and the costs of the area source rule requirements (area source burden). A summary description of the cost savings or avoided costs of the proposed MM2A rule is provided in Section 1.3.

Given that the actions of sources and businesses in response to this proposal are entirely voluntary, the analyses in this RIA, including the estimates of cost savings, are illustrative. The analytic timeline is assumed to begin with the year 2020 and to have an indefinite time horizon. Table 1-1 summarizes the illustrative cost savings and number of facilities projected to obtain area source status for the 75% emissions cutoff (or primary) alternative scenario analyzed. As shown in Table 1-1, the illustrative or potential annual cost savings for the primary scenario is \$168.9 million (2014 dollars) in year 1. For year 2 and years thereafter, the illustrative or potential cost savings is \$200.3 million annually (2014 dollars).

Table 1-1 Summary of Illustrative Cost Savings for the Primary (75% Emissions Cutoff) Scenario (2014\$)

Coverage of Source Categories	Total Number of Facilities in Source Category subject to Major Source NESHAP	Facilities Projected to Obtain Area Source Status	Potential Net Annual Cost Savings (2014\$)
71 Source Categories (RTR data)	3,065	1,621 (52.9%)	\$73.4 Million (year 1) \$86.4 Million (year 2)
Additional Source Categories (35 categories)	3,034	1,383 (45.6%)	\$69.8 Million (year 1) \$80.9 Million (year 2)
ICI Boilers and Process Heaters (3 categories)	1,821	908 (49.9%)	\$25.8 Million (year 1) \$33.1 Million (year 2)
All Source Categories	7,920	3,912 (49.4%)	\$168.9 Million (year 1) \$200.3 Million (year 2)

Source: Eastern Research Group. May 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD.

Tables 1-2 and 1-3 summarize the illustrative cost savings and number of facilities projected to obtain area source status for the 50% emissions cutoff and 125% emissions cutoff alternative scenarios, respectively. As shown in Tables 1-2 and 1-3, the illustrative or potential annual cost savings for these scenarios are \$131.8 million and \$207.6 million (2014 dollars), respectively, in year 1. For year 2 and years thereafter, the illustrative or potential cost savings are \$156.6 million and \$243.8 million annually, respectively (2014 dollars).

Table 1-2 Summary of Illustrative Cost Savings for the 50% Emissions Cutoff Alternative Scenario (2014\$)

Coverage of Source Categories	Total Number of Facilities in Source Category subject to Major Source NESHAP	Facilities Projected to Obtain Area Source Status	Potential Net Annual Cost Savings (2014\$)
71 Source Categories (RTR data)	3,065	1,322 (43.1%)	\$59.0 Million (year 1) \$69.6 Million (year 2)
Additional Source Categories (35 categories)	3,034	1,111 (36.6%)	\$54.5 Million (year 1) \$63.4 Million (year 2)
ICI Boilers and Process Heaters (3 categories)	1,821	658 (36.1%)	\$18.3 Million (year 1) \$23.6 Million (year 2)
All Source Categories	7,920	3,091 (39.0%)	\$131.8 Million (year 1) \$156.6 Million (year 2)

Source: Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD.

Table 1-3 Summary of Illustrative Cost Savings for the 125% Emissions Cutoff Alternative Scenario (2014\$)

Coverage of Source Categories	Total Number of Facilities in Source Category subject to Major Source NESHAP	Facilities Projected to Obtain Area Source Status	Potential Net Annual Cost Savings (2014\$)
71 Source Categories (RTR data)	3,065	1,863 (60.8%)	\$91.6 Million (year 1) \$106.6 Million (year 2)
Additional Source Categories (35 categories)	3,034	1,632 (53.8%)	\$86.3 Million (year 1) \$99.3 Million (year 2)
ICI Boilers and Process Heaters (3 categories)	1,821	1,022 (56.1%)	\$29.7 Million (year 1) \$37.9 Million (year 2)
All Source Categories	7,920	4,517 (57.0%)	\$207.6 Million (year 1) \$243.8 Million (year 2)

Source: Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD.

To comply with Executive Orders (EOs) 12866 and 13771, we have also estimated the present value (PV) of the illustrative cost savings for each scenario. For this analysis, there is the presumption of an infinite time horizon to estimate the PV, given that there is no review period for this action stated in the Clean Air Act. The PV of the cost savings for the primary alternative scenario is \$2.34 billion (in 2014 dollars) at a discount rate of 7%, which is discounted to 2016 in accordance with EO 13771 guidance.⁶ At a discount rate of 3%, the PV is \$6.08 billion (in 2014 dollars), again discounted to 2016. In 2016 dollars, these present values are \$2.39 billion and \$6.24 billion, again discounted to 2016. A measure of the annual cost savings is the equivalent annualized value (EAV), and this is \$163 million (2014 dollars) at a 7% rate for the primary scenario. At a 3% discount rate, the EAV is \$183 million (2014 dollars). In 2016 dollars, the EAV is \$167 million at a 7% discount rate and \$187 million at a 3% rate. We show the PVs and EAVs in 2016 dollars as part of compliance with EO 13771.

We also estimate the potential control costs for some sources that may reduce HAP emissions under the illustrative 125% scenario. This analysis is described in more detail in Chapter 4 of this RIA and in the memorandum for this analysis.⁷

1.2.3 Economic Impact Estimation Approach

To estimate the economic impacts of this proposal, the EPA implemented the sales test to measure impacts on industrial, commercial, and other sources. The sales test is an approach that computes the annualized compliance costs as a share of sales for each company and is the methodology the EPA employs in economic impact analyses such as this one. Another methodology is a profits test, in which annualized compliance costs are calculated as a share of

⁶ Executive Order 13771, “Reducing Regulation and Controlling Regulatory Costs,” can be found at Guidance from US OMB on complying with Executive Order 13771 can be found at <https://www.federalregister.gov/documents/2017/02/03/2017-02451/reducing-regulation-and-controlling-regulatory-costs> and <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2017/M-17-21-OMB.pdf>.

⁷ Memorandum. Larry Sorrels, US EPA/OAQPS/HEID/AEG to EPA Docket No. EPA-HQ-OAR-2019-0282. “Analysis for Illustrative 125% Scenario for MM2A Proposal – Potential Cost Impacts from HAP Major Sources Reducing Emissions as part of Reclassifying to HAP Area Sources.” May, 2019.

profits.⁸ The EPA employs the sales test methodology because revenues or sales data are commonly available data for entities affected by EPA regulations, and profits data normally made available are often not the true profits earned by firms because of accounting and tax considerations. Firms and entities often have ways legally available in the tax code to minimize their reported profits; thus, using reported profits may lead to a less than accurate estimate of the economic impact of a regulation to an affected firm or entity and their consumers. Although screening-level analyses are often employed to estimate impacts to small businesses or entities as part of an analysis in compliance with the Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA), a screening-level analysis can also be used in an economic impact analysis such as this one whose focus is on the regulated companies. Given a general lack of information on the identity of owners of companies potentially affected by the proposed rule, the EPA implemented the recommended sales test and computed cost-to-sales ratios for affected sectors at the establishment (or facility) level.⁹ Information on establishments, employees, and receipts (sales) was taken from the latest complete set of data from the U.S. Economic Census (for 2012, the most recently completed Economic Census).¹⁰ For NAICS 115114, Postharvest Crop Activities, and 611310, Colleges and Universities, the data are from the 2012 County Business Patterns. The cost-to-sales ratios examine the ratio of the average establishment's total yearly avoided costs to the average establishment receipts for enterprises within several employment categories.

1.2.4 Benefits/Disbenefits Analysis

The benefits/disbenefits analysis describes the human health impacts associated with the proposed rule. This proposed rule may potentially result in both emission reductions and

⁸ More information on sales and profit tests as used in analyses done by the EPA can be found at <http://www.epa.gov/sbrefa/documents/rfaguidance11-00-06.pdf>, pp. 32–33.

⁹ Typically, SBREFA impact assessments are conducted at the ultimate parent company level. The EPA assumed that the U.S. Census Bureau definition of enterprise is equivalent to ultimate parent company. Theoretically, the comparison of compliance costs to sales should be conducted at the enterprise level. Because the U.S. Census Bureau only provides data for typical establishments within various enterprise size categories, the EPA chose to compute the cost-to-sales ratio at the establishment (or facility level). The same ratio could be computed at the enterprise level by multiplying both the numerator and the denominator by the typical number of establishments per enterprise in the appropriate enterprise size categories. Using the 2012 Economic Census data on typical establishments means that the cost-to-sales ratios are identical, whether computed at the establishment level or at the enterprise level.

¹⁰ The next version of the Economic Census, for 2017, will be completed and released to the public by the U.S. Census Bureau beginning in September 2019.

increases from a broad array of existing sources. As described in Section 4, pollutant emissions that may be affected include volatile organic compounds (VOCs), which are precursors to both fine particulate matter (PM_{2.5}) and ozone formation; sulfur dioxide (SO₂), which is a precursor to fine particles sized 2.5 microns and smaller (PM_{2.5}); oxides of nitrogen (NO_x), a precursor to both PM_{2.5} and ground-level ozone; organic HAP such as benzene, ethylbenzene, toluene, and vinyl chloride; and methane, a greenhouse gas (GHG) and a precursor to ozone formation. As described in the subsequent sections, these pollutants are associated with substantial health effects, climate effects, and other welfare effects. We are uncertain as to the magnitude, direction, and distribution of these changes in emissions. As such, we are unable to quantify the changes in emissions across these sources and cannot either simulate the change in air quality or characterize the impact of these changes to human health. This is not to imply that changing emissions will not affect human health. Rather, our approach reflects the challenges associated with modeling the direct and indirect impacts of the reductions in emissions for these sectors with the data currently available. In place of quantitative estimates of the quantity and economic value of the pollutant changes, we instead characterize these impacts in qualitative terms. Section 5 provides a qualitative assessment of the health benefits associated with altering exposure to these pollutants, as well as visibility impairment and ecosystem benefits.

1.3 Avoided Costs of the Proposed MM2A Rule

The EPA identified the facilities that could potentially be affected by the proposed MM2A rule. These facilities are classified as major sources but could obtain area source status with the proposed MM2A rule. The May, 2019, ERG cost memo describes how the projected cost savings per source category were calculated for the source categories for which the EPA has completed RTR modeling files. Once a facility achieves area source status, there will be avoided supporting statement costs. However, the facility will still incur compliance costs as an area source facility. There will be permitting costs to the facility and the state agency for obtaining the area source permits to replace the major source permits. These permitting costs are one-time in nature, and are reflected in the year 1 cost savings estimates. The May, 2019, ERG cost memo describes how the avoided supporting statement costs, compliance costs and permitting costs are calculated. The Air Quality Policy Division (AQPD) of EPA's Office of Air Quality Planning and Standards (OAQPS) provided estimates of one-time permitting costs to facilities and states.

The one-time facility permitting cost is \$4,968 per facility (2014 dollars) (U.S. EPA, 2015). The one-time state agency burden is \$3,046 per facility (2014 dollars) (U.S. EPA, 2016c). These costs are based on those for applying and obtaining a synthetic minor permit under the Clean Air Act Title V permitting program. These one-time cost estimates are irrespective of facility size.

The projected illustrative net cost savings in the first year after major source facilities obtain area source status (or year 1) is the sum of the permitting costs to the facilities, the permitting costs to the state agencies, the projected annual compliance cost savings from not having to comply with the major source rule, and the estimated costs of the area source rule requirements. The projected illustrative net cost savings in the second year after major source facilities obtain area source status is the sum of the projected annual cost savings from not having to comply with the major source rule and the estimated costs of the area source rule requirements. Table 1-4 shows, relative to the baseline of no action, the timing of potential costs and cost savings that lead to an overall cost savings for this proposal. The estimate of cost savings for years 1 and 2 do not account for changes in the costs of control equipment that may be associated with reclassification from major to area source status, such as capital, fuel, and operating and maintenance costs.

Table 1-4 Summary of Costs or Cost Savings by Time Period

Source Size	Year 1	Year 2 and Years Thereafter
Major Source	Reporting/supporting statement cost savings	Reporting/supporting statement cost savings
Area Source	<ul style="list-style-type: none"> ▪ Ongoing reporting costs (existing area sources) ▪ Ongoing reporting costs (new area sources) ▪ One-time permitting costs (new area sources) 	<ul style="list-style-type: none"> ▪ Ongoing reporting costs (existing area sources) ▪ Ongoing reporting costs (new area sources)

For the 35 source categories for which the EPA does not have completed RTR modeling files, the EPA used an extrapolated approach. The EPA used 3-digit NAICS codes to match each of these categories (called extrapolated categories) to the directly assessed source categories with RTR data. Then, the EPA calculated the sum of projected cost savings for years 1 and 2 of the source categories that were matched to the extrapolated category. Next, the EPA determined the average cost savings for years 1 and 2 for the matched source categories and used these to

determine the cost savings for the extrapolated category. The May, 2019, ERG Cost Analysis Memorandum describes the extrapolated approach to calculate cost savings in detail. This May, 2019, ERG Cost Memorandum also details the methodology for calculating the projected cost savings for the separate categories of Industrial, Commercial, and Institutional (ICI) Boilers and Process Heaters and Reciprocating Internal Combustion Engines (RICE). The EPA decided to not include RICE in the cost analysis because these are typically co-located with other major HAP sources and any cost savings for these engines would be included in the cost savings associated with the other major source NESHAP.

1.4 Results

1.4.1 Administrative Cost Savings

The illustrative cost savings in Tables 1-1, 1-2, and 1-3 are the avoided administrative burden for years 1 and 2. The illustrative or potential annual cost savings for the primary scenario is \$168.9 million (2014 dollars) in year 1. For year 2 and years thereafter, the illustrative or potential cost savings is \$200.3 million annually (2014 dollars). For alternative scenario 1, the illustrative or potential annual cost savings are \$131.8 million (2014 dollars) in year 1 and \$156.6 million (2014 dollars) in year 2. For alternative scenario 2, the illustrative or potential annual cost savings are \$207.6 million (2014 dollars) in year 1 and \$243.8 million (2014 dollars) in year 2.

1.4.2 Economic Impact Findings for 75% Emissions Cutoff Scenario (Primary Scenario)

The year 1 potential avoided cost-to-sales ratios range from less than 0.01% to 11.08%, with a median (or 50th percentile) potential avoided cost-to-sales ratio of 0.05% across all employment size categories. The twenty-fifth (25th) percentile and seventy-fifth (75th) percentile avoided cost-to-sales ratio in year 1 are 0.01% and 0.16% respectively across all employment size categories. The year 2 avoided cost-to-sales ratios range from less than 0.01% to 12.05%, with a median potential avoided cost-to-sales ratio of 0.06% across all employment size categories. The twenty-fifth percentile and seventy-fifth percentile avoided cost-to-sales ratios in year 2 are 0.02% and 0.22% respectively across all employment size categories. Figure 1-1 below in Section 1.5 provides a chart of these values.

Because facilities do not face permitting costs in year 2, the cost savings are larger in year 2 than year 1, and the resulting avoided cost-to-sales ratios are larger. For example, NAICS 337110 (Wood Kitchen Cabinet and Countertop Manufacturing) has an overall year 1 avoided cost-to-sales ratio of 0.56% and an overall year 2 avoided cost-to-sales ratio of 0.86%. Some NAICS codes that have less than 0.01% ratios in year 1 have positive ratios in year 2, such as NAICS 326150 (Urethane and other Foam Product [except Polystyrene] Manufacturing), which has an overall avoided cost-to-sales ratio of less than 0.01% in year 1 and 0.04% in year 2.

As discussed above, we conducted a small entity analysis for both year 1 and year 2 impact estimates. In year 1, some small size categories have small avoided cost-to-sales ratios. The “fewer than or equal to 19 employees” category of NAICS 424510 (Grain and Field Bean Merchant Wholesalers) has a 0.04% avoided cost-to-sales ratio, and the “20 to 99 employees” category of NAICS 326150 (Urethane and Other Foam Product [except Polystyrene] Manufacturing) has a less than 0.01% avoided cost-to-sales ratio. However, there are cases of larger positive economic impacts for small size categories in year 1, such as the “fewer than or equal to 19 employees” category of NAICS 339999 (All Other Miscellaneous Manufacturing), which has a 11.08% avoided cost-to-sales ratio in year 1. For the same size category, NAICS 493190 (Other Warehousing and Storage) has an avoided cost-to-sales ratio of 2.66% in year 1. Establishments in the “fewer than or equal to 19 employees” size category for NAICS 493190 are considered small businesses for purposes of this analysis because the average receipts per establishment is \$0.7 million which is less than the SBA size standard of \$27.5 million for this NAICS code.

In year 2, small entities generally have larger cost savings and the resulting avoided cost-to-sales ratios are larger. For example, for NAICS 213112 (Support Activities for Oil and Gas Operations) the “fewer than or equal to 19 employees” category in year 1 has an avoided cost-to-sales of 0.85% and in year 2, the ratio is 1.08%. Establishments in the “fewer than or equal to 19 employees” size category for NAICS 213112 are considered small businesses for purposes of this analysis because the average receipts per establishment is \$2.1 million which is less than the SBA size standard of \$38.5 million. For NAICS 339999, for the “fewer than or equal to 19 employees” category, the avoided cost-to-sales ratio in year 2 is 12.05%.

1.4.3 Findings for 50% Emissions Cutoff Scenario (Alternative Scenario 1)

For the first alternative scenario with a threshold of 50%, the year 1 avoided cost-to-sales ratios range from -0.01% to 4.67%, with a median avoided cost-to-sales ratio of 0.04% across all employment size categories. The twenty-fifth percentile and seventy-fifth percentile avoided cost-to-sales ratio in year 1 are .01% and .14% respectively across all employment size categories. The year 2 avoided cost-to-sales ratios range from less than 0.01% to 5.16%, with a median avoided cost-to-sales ratio of 0.06% across all employment size categories. The twenty-fifth percentile and seventy-fifth percentile avoided cost-to-sales ratio in year 2 are 0.03% and 0.23% respectively across all employment size categories.

Because facilities do not face permitting costs in year 2, the cost savings are larger and the resulting avoided cost-to-sales ratios are higher in year 2 than year 1. For example, NAICS 493110 (General Warehousing and Storage) has an overall year 1 avoided cost-to-sales ratio of 1.14% and an overall year 2 avoided cost-to-sales ratio of 1.42%. Three NAICS codes, 324110 (Petroleum Refineries), 325110 (Petrochemical Manufacturing), and 336112 (Light Truck and Utility Vehicle Manufacturing), have less than 0.01% overall avoided cost-to-sales ratios in both year 1 and year 2. NAICS 326150 (Urethane and Other Foam Product [except Polystyrene] Manufacturing) is the only NAICS code to have a negative avoided cost-to-sales ratio (-0.01%) in year 1, but in year 2, its avoided cost-to-sales ratio is positive (0.02%).

Like the primary scenario, we conducted a small entity analysis for both year 1 and year 2 impact estimates for the alternate scenario 1. In year 1, some small size categories have low avoided cost-to-sales ratios. NAICS 424710 (Petroleum Bulk Stations and Terminals) has an avoided cost-to-sales ratio of 0.02% for the “fewer than or equal to 19 employees” category and 0.01% for the “20 to 99 employees” category in year 1. However, there are cases of larger positive economic impacts for small size categories in years 1 and 2. NAICS 339999 (All Other Miscellaneous Manufacturing) has an avoided cost-to-sales ratio of 3.56% for the “fewer than or equal to 19 employees” category in year 1, and NAICS 493190 (Other Warehousing and Storage), has an avoided cost-to-sales ratio of 3.39% for the same size category in year 2. As explained above, establishments in the “fewer than or equal to 19 employees” size category for NAICS 493190 are considered small businesses for purposes of this analysis based on the SBA size standard for this NAICS code.

1.4.4 Findings for 125 Percent Emissions Cutoff Scenario (Alternative Scenario 2)

For alternative scenario 2, which has a threshold of 125%, the year 1 avoided cost-to-sales ratios range from less than 0.01% to 11.08%, with a median avoided cost-to-sales ratio of 0.05% across all employment size categories. The twenty-fifth percentile and seventy-fifth percentile avoided cost-to-sales ratio in year 1 are 0.01% and 0.16% respectively across all employment size categories. The year 2 avoided cost-to-sales ratios range from less than 0.01% to 12.05%, with a median avoided cost-to-sales ratio of 0.06% across all employment size categories. The twenty-fifth percentile and seventy-fifth percentile avoided cost-to-sales ratio in year 2 are 0.02% and 0.21% respectively across all employment size categories.

Because facilities do not face permitting costs in year 2, the cost savings are generally larger, and the resulting avoided cost-to-sales ratios are larger in year 2 than year 1. For example, NAICS 561990 (All Other Support Services) has an overall year 1 avoided cost-to-sales ratio of 0.63% and an overall year 2 avoided cost-to-sales ratio of 0.94%. Some NAICS codes that have less than 0.01% ratios in year 1 have positive ratios in year 2, such as NAICS 326150 (Urethane and other Foam Product [except Polystyrene] Manufacturing), which has an overall avoided cost-to-sales ratio of less than 0.01% in year 1 and 0.04% in year 2.

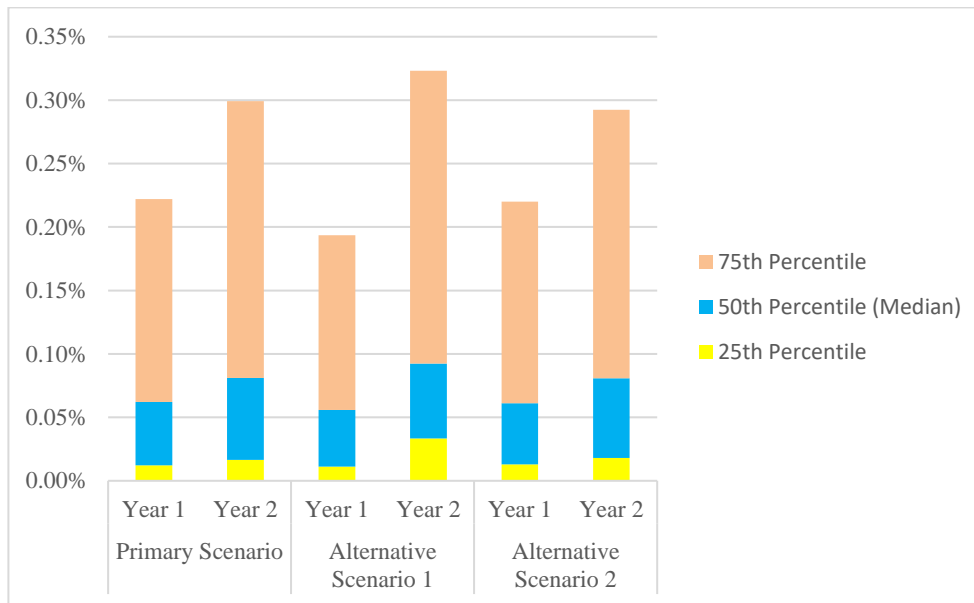
Like for the primary scenario and alternative scenario 1, we conducted a small entity analysis for both year 1 and year 2 impact estimates for alternative scenario 2. In year 1, some small size categories have low avoided cost-to-sales ratios. For instance, NAICS 424510 (Grain and Field Bean Merchant Wholesalers) has an avoided cost-to-sales of 0.04% for the “fewer than or equal to 19 employees” category and 0.01% for the “20 to 99 employees” category in year 1. However, there are cases of larger positive economic impacts for small size categories in years 1 and 2. NAICS 339999 (All Other Miscellaneous Manufacturing) has a year 1 “fewer than or equal to 19 employees” category avoided cost-to-sales ratio of 11.08%, and NAICS 493190 (Other Warehousing and Storage) has a year 2 avoided cost-to-sales ratio of 9.02% for the same size category. As stated previously, establishments in this size category for NAICS 493190 are considered small businesses based on the SBA size standard for this NAICS code.

1.5 Comparison of the Percentile Results for Each Scenario

Figure 1-1 displays the cost-to-sales ratios percentile results for the primary and two alternative scenarios. In year 1, the twenty-fifth percentiles, fiftieth percentiles (medians), and seventy-fifth percentiles across all employment size categories are very similar across the three scenarios. The twenty-fifth percentiles are 0.01% for each scenario, the medians are 0.04% for alternative scenario 1 and 0.05% for both the primary scenario and alternative scenario 2, and the seventy-fifth percentiles are 0.14% for alternative scenario 1 and 0.16% for both the primary scenario and alternative scenario 2. Hence, in year 1 all primary scenario and alternative scenario 2 percentiles are the same whereas the alternative scenario 1 results are a bit different for the fiftieth and seventy-fifth percentiles.

In year 2, the percentiles across all employment size categories are also quite similar across the three scenarios. The twenty-fifth percentiles are 0.02% for both the primary scenario and alternative scenario 2 and 0.03% for alternative scenario 1, the medians are 0.06% for each scenario, and the seventy-fifth percentiles are between 0.21% and 0.23% for the three scenarios (0.22% for the primary scenario, 0.23% for alternative scenario 1 and 0.21% for alternative scenario 2). Hence, in year 2 the median is the same across scenarios, the twenty-fifth percentile results match for the primary scenario and alternative scenario 2, but the seventy-fifth percentiles are slightly different across scenarios.

Figure 1-1: Cost-to-Sales Ratios Percentile Results for Primary Scenario, Alternative Scenario 1, and Alternative Scenario 2



Note: The year 2 percentile results are for year 2 and are also the annual results for years thereafter. The median revenue for industries included in this analysis is \$9.13 billion (2014\$).

Sources: 2012 Economic Census, 2012 County Business Patterns, 2017 SBA Size Standards, SBA February 2016 Size Standards, SBA 2007 Size Standards, Federal Reserve Bank of St. Louis Economic Research, Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD.

1.6 Limitations and Uncertainties of the Analysis

This economic analysis has many sources of uncertainty. The most prominent uncertainty is that the EPA does not know which sources will take advantage of the opportunity to reclassify. The original 2007 proposal¹¹ did not provide analyses of removing OIAI because it was stated that impacts could not be quantified without knowing which sources will avail themselves of the regulatory provisions proposed in this rule and what methods of HAP emission reductions will be used. In addition, the 2007 proposal also indicated, “It is unknown how many sources would choose to take permit conditions that would limit their PTE to below major source levels.”

¹¹ Federal Register. National Emissions Standards for Hazardous Air Pollutants: General Provisions. 72 FR 69 (January 3, 2007) <https://www3.epa.gov/airtoxics/gp/fr03ja07.pdf>.

Within this group, it also is not known how many sources may increase their emissions from the major source MACT level (assuming the level is below the major source thresholds). Similarly, we cannot identify or quantify the universe of sources that would decrease their HAP emissions to below the level required by the NESHAP to achieve area source status. All such decisions discussed here are entirely voluntary by each HAP major sources.

Additional limitations and uncertainties include the following:

- A major assumption in the estimation of potential cost savings in this RIA is that all major sources in each source category that can reclassify to an area source will do so subject to a HAP PTE limitation. It is possible that major sources may choose not to reclassify because cost savings are not a sufficient incentive or for other reasons (*e.g.*, companies concerned with their environmental reputation).
- In addition to the uncertainty in the estimates of sources affected by this proposed rule, there is uncertainty in the burden costs used to estimate the regulatory relief from this rule. These uncertainties also affect the economic impact analysis conducted. The economic impact analysis compares the avoided burden cost estimates with average industry revenues to gauge the impact of the proposed MM2A rule for affected sources.
- We used average industry revenue and average establishment revenue estimates by entity size to estimate avoided cost-to-sales ratios. The actual impacts to individual entities affected by this policy change may differ from industry averages.
- The average entity costs used to compute the sales test vary across sources but are the same across establishment size categories. As a result, the sales test will likely overstate the avoided cost-to-receipt ratio for establishments owned by small businesses.
- Using the 2012 Economic Census, we collected and organized data on number of establishments, employment, and receipts for affected sources represented by NAICS codes. However, because of confidentiality issues, some data values were not available or reported with a range of values. In addition, some NAICS codes were not valid 2012 NAICS codes, and either no data were reported for them in the 2012 Economic Census, or limited data were reported and not broken down by employment

size categories. These data limitations are described in detail in Table 7-1 in Section 7 and prevent us from reporting avoided cost-to-sales ratios for every employment size category for some NAICS codes.

- The underlying establishment and receipts data are a limiting factor because if either of these measures is not reported for a certain category, we cannot calculate the average receipts per establishment, which is needed for the avoided cost-to-sales ratio calculation. However, for some cases avoided cost-to-sales ratios are not reported because zero facilities are projected to obtain area source status; therefore, there are no facilities to calculate the average cost per entity.

This RIA estimates administrative burden reduction and some economic impact as measured by avoided cost-to-sales ratios. The analysis does not measure costs or cost savings related to control equipment changes (*e.g.*, decrease in control device operating and maintenance costs due to reduced device use) and does not provide quantitative estimates of changes in emissions and benefits.

1.7 Organization of this Report

The remainder of this report supports and details the methodology and the results of this illustrative RIA.

- Section 2 presents a discussion of the regulatory baseline, analysis scenarios, and affected entities.
- Section 3 describes the administrative cost savings of the proposed rule including those for the two alternative scenarios.
- Section 4 describes the impacts on emissions from the proposed rule and potential control cost impacts for sources affected by the illustrative 125% scenario.
- Section 5 describes the benefits/disbenefits of the proposed rule.
- Section 6 describes the economic impact methodology and the estimated economic impacts of the proposed rule.
- Section 7 describes limitations and uncertainties of the analyses in the RIA.
- Section 8 lists the references for the analyses included in this RIA.

2. BASELINE DESCRIPTION, REGULATORY SCENARIOS, AND AFFECTED ENTITIES

The OIAI policy did not allow a major source to become an area source if its PTE was over the major source threshold as of the source's first compliance date. With the proposed MM2A rule, sources that were once classified as major sources can reclassify to area source status at any time by taking limits on its PTE HAP below the major source thresholds. To determine which facilities could potentially reclassify to area source status, the EPA used the 2014 NEI whole facility HAP emissions along with source category risk assessment modeling files to identify facilities with actual emissions below 75% of major source thresholds. This 75% emissions cutoff of 7.5 tpy for one HAP and 18.75 tpy for all HAPs is the primary scenario in this analysis to calculate the economic impacts of the proposed MM2A rule on various industry sectors. Two alternative scenarios, a 50% emissions cutoff and a 125% emissions cutoff, are also included in this analysis. An explanation of the uncertainties associated with this methodology is discussed in Section 7 of this report. The basic steps used to estimate affected sources and permitting actions under the primary and alternative scenarios are described in Sections 2.1, 2.2, and 2.3.

2.1 Basic Steps for the Analysis Under the Primary Scenario

1) *Identify source categories.* The EPA selected about 110 source categories subject to major source NESHAP requirements to be included in the MM2A cost analysis. Sixty-five categories in this group were assessed by the EPA using data from the RTR modeling files and had cost savings expected for each. The EPA also identified six categories where the MM2A policy change is not expected to have an impact, for a total of 71 source categories with RTR modeling files. In addition, 35 source categories were analyzed using an extrapolated approach (*i.e.*, using the cost information for the 71 source categories to estimate impacts for the 35 source categories). Three ICI Boilers and Process Heaters source categories and the RICE source category were separately assessed. A detailed description of how the EPA identified and assessed affected sources categories is provided in the May, 2019 ERG Cost Analysis Memorandum.

The selected sources evaluated in this analysis can be grouped in the following sectors:

- Energy (*e.g.*, Crude Petroleum & Natural Gas Extraction)
- Industrial (*e.g.*, Petrochemical Manufacturing and Automobile Manufacturing)

- Waste Treatment (*e.g.*, Hazardous Waste Treatment & Disposal)
- Commercial (*e.g.*, General Warehousing & Storage)
- Agriculture (*e.g.*, Postharvest Crop Activities [except Cotton Ginning])
- Utilities (*e.g.*, Hydroelectric Power Generation)
- Educational Services (*e.g.*, Colleges, Universities, and Professional Schools)

The six NAICS codes identified in the categories with RTR modeling files that would not be affected (*i.e.*, have no facilities projected to obtain area source status) by the proposed MM2A rule are in the industrial sector and are as follows:

1. All Other Miscellaneous Food Manufacturing (NAICS 311999)
2. Paper (except Newsprint) Mills (NAICS 322121)
3. Artificial & Synthetic Fibers & Filament Manufacturing (NAICS 325220)
4. Phosphatic Fertilizer Manufacturing (NAICS 325312)
5. Alumina Refining & Primary Aluminum Production (NAICS 331313)
6. Copper Rolling, Drawing, Extruding & Alloying (NAICS 331420)

2) *Identify facilities for the 75% emissions cutoff scenario.* The EPA used source category RTR modeling files and 2014 NEI whole facility emissions to identify facilities with actual emissions below 75% of major source thresholds that would qualify as area source facilities for the primary scenario. Actual emissions for each source category were obtained from the 2014 NEI. Table 2-1 identifies facilities affected by the proposed MM2A rule under the primary scenario. The calculation of facilities projected to obtain area source status in each sector and source category is based on the sources expected to experience regulatory relief listed by sector in Appendix A-1.

The NEI contains the EPA's most complete estimates of HAP emissions. The EPA's Air Toxics Program identifies 187 HAP. Some examples of these are benzene, formaldehyde and acetaldehyde. The NEI's HAP emission estimates allow the EPA to determine if there is any progress being made in the reduction of HAP as described in the Clean Air Act Amendments of 1990. The 2014 NEI obtains data from the state, local and tribal (S/L/T) air agencies, as well as the development of NESHAP, and creates a national emissions database with this information.

Table 2-1 Facilities Affected by the Proposed Rule Under the Primary Scenario

	Facilities Projected to Obtain Area Source Status
Energy	367
Waste Treatment	359
Agriculture	1
Industrial	2,894
Commercial	110
Utilities	115
Educational Services	13

Sources: 2012 Economic Census; Eastern Research Group. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD. May, 2019.

The Air Emissions Reporting Rule (AERR) requires state agencies to report all sources of emissions, except fires and biogenic sources. States must report criteria air pollutant emissions, and there is a system in place for the voluntary submission of HAP emissions. The 2014 NEI uses the AERR-based inventory. The emission thresholds for reporting to the AERR are PTE thresholds versus actual emission thresholds. However, the reported emissions are actual emissions.

3) *Estimate ongoing labor burden.* The EPA calculated a per-facility labor burden using supporting statements. Supporting statement costs are the monitoring, recordkeeping, and reporting costs that an emitting unit incurs yearly as a result of being classified as a HAP major source and subject to a major source NESHAP. This per-facility labor burden multiplied by the number of facilities below 75% of the major source thresholds provides the projected cost savings for these facilities becoming area sources for the primary regulatory scenario.

4) *Obtain average one-time permitting costs.* The AQPD of EPA's OAQPS provided the one-time permitting costs to facilities of \$4,968 per facility and the one-time state agency burden of \$3,046 per facility. These one-time permitting costs to obtain area source permits were multiplied by the number of facilities below the 75% threshold to estimate total permitting costs.

5) *Obtain area source burden estimates.* Where available, the EPA obtained area source burden estimates for facilities in each category subject to area source NESHAP. If the burden estimate data were not available, the EPA used the default average of \$2,108/year per facility. The May, 2019 ERG Cost Analysis Memorandum explains how this default value was estimated. These area source burden estimates per facility were multiplied by the number of facilities below the 75% emissions cutoff to obtain total area source burden.

2.2 Basic Steps Under Alternative Scenario 1

The EPA used source category RTR modeling files and 2014 NEI whole facility emissions to identify facilities with actual emissions below 50% of major source thresholds that would qualify as area source facilities for alternative scenario 1. The per facility labor burden multiplied by the number of facilities below 50% of the major source thresholds provided the projected cost savings for the facilities becoming area sources for the alternative scenario 1. The one-time permitting costs were multiplied by the number of facilities below the 50% threshold to estimate total permitting costs. The per facility area source burden estimates were multiplied by the number of facilities below the 50% emissions cutoff to obtain total area source burden. Table 2-2 identifies facilities affected by the proposed MM2A rule under the 50% emissions cutoff scenario. The calculation of facilities projected to obtain area source status in each sector is based on the sources expected to experience regulatory relief listed by sector and source category in Appendix A-2.

Table 2-2 Facilities Affected by Proposed Rule Under Alternative Scenario 1

	Facilities Projected to Obtain Area Source Status
Energy	293
Waste Treatment	286
Agriculture	0
Industrial	2,287
Commercial	82
Utilities	87
Educational Services	9

Sources: 2012 Economic Census; Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Draft Memorandum for U.S. EPA/OAQPS/SPPD.

2.3 Basic Steps Under Alternative Scenario 2

The EPA used source category RTR modeling files and 2014 NEI whole facility emissions to identify facilities with actual emissions below 125% of major source thresholds and that would qualify as area source facilities for alternative scenario 2. The per-facility labor burden multiplied by the number of facilities below 125% of the major source thresholds provided the cost savings for the facilities becoming area sources for the alternative scenario 2. The one-time permitting costs were multiplied by the number of facilities below the 125% threshold to estimate total permitting costs. The area source burden estimates were multiplied by

the number of facilities below the 125% emissions cutoff to obtain total area source burden. Table 2-3 identifies facilities affected by the proposed MM2A rule under the 125% emissions cutoff scenario. The calculation of facilities projected to obtain area source status in each sector is based on the sources expected to experience regulatory relief listed by sector and source category in Appendix A-3.

Table 2-3 Facilities Affected by Proposed Rule Under Alternative Scenario 2

	Facilities Projected to Obtain Area Source Status
Energy	419
Waste Treatment	435
Agriculture	1
Industrial	3,322
Commercial	134
Utilities	127
Educational Services	15

Sources: 2012 Economic Census; Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD.

3. REGULATORY RELIEF OR AVOIDED BURDEN COSTS

Around 110 source categories subject to major source NESHAP requirements served as the original universe for the analysis of avoided burden costs for the proposed MM2A rule. Of these 110 source categories, the EPA selected 71 source categories with completed RTR modeling files to be included in the MM2A cost analysis. In addition, 35 source categories were analyzed using an extrapolated approach (*i.e.*, using the cost information for the 71 source categories to estimate impacts for the 35 source categories). Three ICI Boilers and Process Heaters source categories and a RICE category were separately assessed using specific approaches designed for these categories. A detailed description of how the EPA identified and assessed affected sources categories is provided in the May, 2019, ERG cost memo. Sections 3.1 and 3.2 explain the potential avoided costs to affected sources of this policy change.

3.1 Year 1 Avoided Costs for Sources Affected by the Proposed MM2A Rule

Table 3-1 shows the costs avoided by affected sources in the first year of the proposed MM2A rule under the 75% emissions cutoff scenario. It provides the number of facilities within a NAICS code that are subject to major source NESHAP requirements standards under section 112 of the CAA. These facilities are considered major sources. With the proposed MM2A rule, a facility that is a major source can reclassify to area source status by taking enforceable limits on its PTE HAP emissions. The table also shows the number of major source facilities that could potentially obtain area source status. Once a facility achieves area source status, there will be avoided costs; however, within the first year (year 1), there will be one-time permitting costs to the facility and the state agency. Each major source facility that is becoming an area source facility will have to apply for and obtain an area source permit, and the state agency will need to review and issue the permit. Hence, there will be permitting costs for both of these entities.

As mentioned previously in this RIA, the permitting cost to a facility is a one-time facility permitting burden estimate of \$4,968 (2014 dollars) per facility, and there is a one-time state agency burden of \$3,046 (2014 dollars) per facility. These one-time permitting costs are multiplied by the number of facilities projected to obtain area source status to obtain total permitting costs to the state agency and to the facilities obtaining area source status.

For the categories with completed RTR modeling files, the annual projected cost savings per source category are calculated based on the average supporting statement costs (*i.e.*, monitoring, recordkeeping and reporting costs) per facility from the ICR supporting statement. These cost savings are multiplied by the facilities projected to obtain area source status to obtain the projected cost savings per source category.

The annual estimated cost of area source requirements for a source category is calculated based on the estimated area source rule burden for that source category multiplied by the number of facilities projected to obtain area source status.

The projected net cost savings for year 1 for the categories with RTR modeling files are calculated by adding together the (i) annual estimated cost of area source requirements, (ii) annual projected cost savings from not having to comply with the major source rule and (iii) the total area source permitting costs to the state agency and the total area source permitting costs to the facilities within each identified NAICS code.

For the categories that were assessed using an extrapolated approach, the EPA used 3-digit NAICS codes to match the extrapolated category to the directly assessed source categories with RTR data. Then, the EPA calculated the sum of projected cost savings in year 1 of the source categories that were matched to the extrapolated category. Next, the EPA determined the average cost savings for year 1 for the matched source categories and used these to determine the cost savings for the extrapolated category in year 1. The May, 2019 ERG Cost Analysis Memorandum describes how these categories were assessed in year 1 in greater detail. RICE was not included in the cost analysis because these are typically co-located with other major HAP sources and any cost savings for these engines would be included in the other major source cost savings.

The avoided costs in year 1, excluding the permitting cost to the state agency of reviewing and issuing area source permits, are also displayed in Table 3-1. For the categories with completed RTR modeling files, this calculation is the sum of the annual estimated cost of area source requirements, the annual projected compliance costs (savings), and the area source permitting cost to the facilities expected to obtain area source status. The average avoided cost per entity is the average net projected cost savings in year 1, excluding the permitting costs to the state agency, for the facilities projected to obtain area source status.

Table 3-2 shows the costs avoided by affected sources in year 1 of the proposed MM2A rule under the 50% emissions cutoff scenario. Table 3-3 shows the costs avoided by affected sources in year 1 of the proposed MM2A rule under the 125% emissions cutoff scenario. We note that the cost for facilities affected under the 125% emissions cutoff scenario include those that have HAP emissions of between 100% to 125%, and this cost accounts for the 605 additional sources that potentially will reclassify under this scenario as compared to the 75% emissions scenario. Since these costs do not account for costs from control technology installation and operation that may be occurred by these sources as they reduce emissions, the overall cost savings may be lower than shown here.

Table 3-1 Year 1 Avoided Cost for Affected Sources of the Proposed MM2A Rule Under the Primary Scenario (2014\$)

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/ Entity
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	1	1	4,968	3,046			(6,799)	9,845	9,845
Energy	Crude Petroleum and Natural Gas Extraction	211111	120	64	317,952	194,944	(357,423)	26,732	(156,233)	351,177	5,487
Energy	Natural Gas Liquid Extraction	211112	26	15	74,520	45,690			(526,434)	572,124	38,142
Industrial	Iron Ore Mining	212210	9	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Lead Ore and Zinc Ore Mining	212231	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Copper Ore and Nickel Ore Mining	212234	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	All Other Metal Ore Mining	212299	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Industrial Sand Mining	212322	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Kaolin and Ball Clay Mining	212324	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Potash, Soda, and Borate Mineral Mining	212391	6	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	All Other Nonmetallic Mineral Mining	212399	1	1	4,968	3,046			(6,799)	9,845	9,845
Energy	Support Activities for Oil and Gas Operations	213112	3	2	9,936	6,092			(30,213)	36,305	18,153
Utilities	Hydroelectric Power Generation	221111	1	1	4,968	3,046			(6,799)	9,845	9,845
Utilities	Fossil Fuel Electric Power Generation	221112	334	72	357,696	219,312			(2,251,393)	2,470,705	34,315
Utilities	Biomass Electric Power Generation	221117	5	4	19,872	12,184			(213,899)	226,083	56,521
Utilities	Other Electric Power Generation	221118	1	1	4,968	3,046			(6,799)	9,845	9,845
Utilities	Other Electric Power Generation^	221119	8	5	24,840	15,230			(237,314)	252,544	50,509
Utilities	Electric Power Distribution	221122	1	1	4,968	3,046			(6,799)	9,845	9,845
Utilities	Natural Gas Distribution	221210	13	7	34,776	21,322			(250,912)	272,234	38,891
Utilities	Water Supply and Irrigation Systems	221310	2	2	9,936	6,092			(30,213)	36,305	18,153
Utilities	Sewage Treatment Facilities	221320	19	10	49,680	30,460	(365)	365	(165,815)	196,275	19,628
Utilities	Steam and Air-Conditioning Supply	221330	22	12	59,616	36,552			(319,333)	355,885	29,657
Industrial	Other Animal Food Manufacturing	311119	1	0	0	0			0	0	
Industrial	Wet Corn Milling	311221	16	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Soybean Processing^	311222	16	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Other Oilseed Processing^	311223	5	0	0	0			0	0	
Industrial	Soybean and Other Oilseed Processing	311224	116	14	69,552	42,644	(433,820)	23,188	(359,491)	402,135	28,724
Industrial	Fats and Oils Refining and Blending	311225	2	0	0	0			0	0	
Industrial	Beet Sugar Manufacturing	311313	11	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Cane Sugar Manufacturing	311314	3	0	0	0			0	0	

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/Entity
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	2	0	0	0			0	0	
Industrial	Fruit and Vegetable Canning	311421	1	0	0	0			0	0	
Industrial	Specialty Canning	311422	2	0	0	0			0	0	
Industrial	Cheese Manufacturing	311513	2	0	0	0			0	0	
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	3	0	0	0			0	0	
Industrial	Rendering and Meat Byproduct Processing	311613	1	0	0	0			0	0	
Industrial	Commercial Bakeries	311812	2	0	0	0			0	0	
Industrial	Other Snack Food Manufacturing	311919	1	0	0	0			0	0	
Industrial	Coffee and Tea Manufacturing	311920	1	0	0	0			0	0	
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1	0	0	0			0	0	
Industrial	Spice and Extract Manufacturing	311942	4	0	0	0			0	0	
Industrial	All Other Miscellaneous Food Manufacturing	311999	6	0	0	0	0	0	0	0	
Industrial	Breweries	312120	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Distilleries	312140	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Tobacco Manufacturing	312230	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Yarn Spinning Mills^	313111	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Thread Mills^	313113	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Broadwoven Fabric Mills	313210	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Narrow Fabric Mills^	313221	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Textile and Fabric Finishing Mills	313310	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Broadwoven Fabric Finishing Mills^	313311	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Fabric Coating Mills	313320	50	29	144,072	88,334	(385,274)	52,700	(346,123)	434,457	14,981
Industrial	Tire Cord and Tire Fabric Mills^	314992	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Leather and Hide Tanning and Finishing	316110	6	5	24,840	15,230	(9,795)	6,324	(9,643)	24,873	4,975
Industrial	Sawmills	321113	61	43	213,624	130,978			(1,376,608)	1,507,586	35,060
Industrial	Wood Preservation	321114	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Softwood Veneer and Plywood Manufacturing	321212	29	21	104,328	63,966			(600,458)	664,424	31,639
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	6	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Reconstituted Wood Product Manufacturing	321219	284	205	1,018,440	624,430	(1,081,034)	69,564	(4,899,866)	5,523,634	26,945
Industrial	Wood Window and Door Manufacturing	321911	4	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	4	2	9,936	6,092			(30,213)	36,305	18,153

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/ Entity
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Pulp Mills	322110	18	0	0	0			0	0	
Industrial	Paper (except Newsprint) Mills	322121	281	0	0	0	0	0	0	0	
Industrial	Newsprint Mills	322122	7	0	0	0			0	0	
Industrial	Paperboard Mills	322130	36	0	0	0			0	0	
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	213	132	655,776	402,072			(1,710,241)	2,110,907	15,992
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	17	0	0	0			0	0	
Industrial	Coated and Laminated Paper Manufacturing^	322222	12	0	0	0			0	0	
Industrial	Sanitary Paper Product Manufacturing	322291	2	0	0	0			0	0	
Industrial	All Other Converted Paper Product Manufacturing	322299	1	0	0	0			0	0	
Industrial	Commercial Lithographic Printing^	323110	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Commercial Printing (except Screen and Books)	323111	188	110	546,480	335,060	(1,724,460)	212,908	(983,263)	1,318,323	11,985
Industrial	Books Printing	323117	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Petroleum Refineries	324110	424	149	740,232	453,854	(22,515,745)	61,132	(23,230,806)	23,683,758	158,951
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	3	0	0	0			0	0	
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	4	0	0	0			0	0	
Industrial	Petrochemical Manufacturing	325110	597	238	1,182,384	724,948	(536,852)	189,809	374,990	348,607	1,465
Industrial	Industrial Gas Manufacturing	325120	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1	0	0	0			0	0	
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	3	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	2	0	0	0			0	0	
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	10	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Alkalies and Chlorine Manufacturing^	325181	4	1	4,968	3,046			(6,717)	10,961	10,961
Industrial	Carbon Black Manufacturing^	325182	21	8	39,744	24,368			(28,908)	54,169	6,771
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	93	35	173,880	106,610			(37,286)	145,311	4,152
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	1	0	0	0			0	0	
Industrial	Ethyl Alcohol Manufacturing	325193	7	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	2	0	0	0			0	0	
Industrial	All Other Basic Organic Chemical Manufacturing	325199	77	24	119,232	73,104	(393,103)	6,324	(963,196)	1,036,300	43,179
Industrial	Plastics Material and Resin Manufacturing	325211	833	307	1,525,176	935,122	(14,974,394)	189,448	(42,772,523)	43,706,180	142,365
Industrial	Synthetic Rubber Manufacturing	325212	24	4	19,872	12,184	(2,651)	5,920	20,512	(8,328)	(2,082)

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/ Entity
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	6	2	9,936	6,092	0	0	(30,213)	36,305	18,153
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1	0	0	0			0	0	
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	8	3	14,904	9,138			(283,139)	291,904	97,301
Industrial	Nitrogenous Fertilizer Manufacturing	325311	16	6	29,808	18,276			(244,113)	262,389	43,731
Industrial	Phosphatic Fertilizer Manufacturing	325312	30	2	9,936	6,092	0	0	(30,213)	36,305	18,153
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	22	6	29,808	18,276	(327,193)	9,867	(284,055)	302,331	50,389
Industrial	Medicinal and Botanical Manufacturing	325411	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Pharmaceutical Preparation Manufacturing	325412	36	11	54,648	33,506	(1,283,038)	15,787	(1,240,151)	1,273,657	115,787
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1	0	0	0			0	0	
Industrial	Paint and Coating Manufacturing	325510	51	26	129,168	79,196	(3,141,816)	47,362	(2,932,331)	3,011,527	115,828
Industrial	Adhesive Manufacturing	325520	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Surface Active Agent Manufacturing	325613	2	0	0	0			0	0	
Industrial	Toilet Preparation Manufacturing	325620	2	0	0	0			0	0	
Industrial	Explosives Manufacturing	325920	2	0	0	0			0	0	
Industrial	Custom Compounding of Purchased Resins	325991	5	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	10	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	5	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	16	10	49,680	30,460			(287,924)	318,384	31,838
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	12	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	7	5	24,840	15,230			(220,698)	235,928	47,186
Industrial	Polystyrene Foam Product Manufacturing	326140	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	19	19	94,392	57,874	(46,810)	5,976	48,176	9,698	510
Industrial	Plastics Plumbing Fixture Manufacturing	326191	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	All Other Plastics Product Manufacturing	326199	148	101	501,768	307,646	(3,269,461)	177,072	(2,975,860)	3,283,506	32,510
Industrial	Tire Manufacturing (except Retreading)	326211	39	27	134,136	82,242			(729,712)	812,121	30,079

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/ Entity
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	6	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	All Other Rubber Product Manufacturing	326299	14	9	44,712	27,414	(31,604)	2,108	(295,808)	323,222	35,914
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	4	3	14,904	9,138			(28,410)	36,025	12,008
Industrial	Clay Building Material and Refractories Manufacturing	327120	46	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Clay Refractory Manufacturing^	327124	8	4	19,872	12,184			(57,630)	69,814	17,453
Industrial	Flat Glass Manufacturing	327211	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	17	11	54,648	33,506	(101,956)	10,540	(295,459)	328,965	29,906
Industrial	Cement Manufacturing	327310	6	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Lime Manufacturing	327410	43	22	109,296	67,012			(318,363)	385,375	17,517
Industrial	Gypsum Product Manufacturing	327420	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Abrasive Product Manufacturing	327910	4	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Mineral Wool Manufacturing	327993	13	6	29,808	18,276	(69,750)	4,216	(263,405)	281,681	46,947
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	72	45	223,560	137,070	(1,481,176)	88,536	(1,093,064)	1,230,134	27,336
Industrial	Iron and Steel Mills^	331111	50	5	24,840	15,230			(67,226)	82,456	16,491
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	1	0	0	0			0	0	
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	5	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Rolled Steel Shape Manufacturing	331221	6	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Primary Aluminum Production^	331312	2	0	0	0			0	0	
Industrial	Alumina Refining and Primary Aluminum Production	331313	16	1	4,968	3,046	0	0	(6,799)	9,845	9,845
Industrial	Secondary Smelting and Alloying of Aluminum	331314	53	22	109,296	67,012	(267,384)	114,385	8,496	58,516	2,660
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	6	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Aluminum Extruded Product Manufacturing^	331316	1	0	0	0			0	0	
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	2	0	0	0			0	0	
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1	0	0	0			0	0	
Industrial	Primary Smelting and Refining of Copper^	331411	0	0	0	0			0	0	
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	2	0	0	0			0	0	

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/Entity
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	3	0	0	0	0	0	0		
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1	0	0	0		0	0		
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	3	1	4,968	3,046		(6,799)	9,845	9,845	
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	2	0	0	0		0	0		
Industrial	Iron Foundries	331511	83	40	198,720	121,840		(809,564)	932,099	23,302	
Industrial	Steel Foundries (except Investment)	331513	2	0	0	0		0	0		
Industrial	Aluminum Die-Casting Foundries^	331521	1	0	0	0		0	0		
Industrial	Aluminum Foundries (except Die-Casting)	331524	2	0	0	0		0	0		
Industrial	Nonferrous Forging	332112	1	1	4,968	3,046		(6,799)	9,845	9,845	
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	1	1	4,968	3,046		(6,799)	9,845	9,845	
Industrial	Hand and Edge Tool Manufacturing^	332212	1	1	4,968	3,046		(6,799)	9,845	9,845	
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	1	1	4,968	3,046		(6,799)	9,845	9,845	
Industrial	Fabricated Structural Metal Manufacturing	332312	1	1	4,968	3,046		(6,799)	9,845	9,845	
Industrial	Metal Window and Door Manufacturing	332321	5	5	24,840	15,230		(237,314)	252,544	50,509	
Industrial	Sheet Metal Work Manufacturing	332322	1	1	4,968	3,046		(6,799)	9,845	9,845	
Industrial	Metal Can Manufacturing	332431	14	8	39,744	24,368	(40,000)	619	(282,279)	306,647	38,331
Industrial	Other Metal Container Manufacturing	332439	4	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Metal Heat Treating	332811	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	436	332	1,649,376	1,011,272	(13,959,045)	620,579	(11,324,462)	12,335,734	37,156
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	3	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Other Fabricated Metal Manufacturing	332990	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Small Arms Ammunition Manufacturing	332992	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Ammunition (except Small Arms) Manufacturing	332993	3	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	3	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Farm Machinery and Equipment Manufacturing	333111	8	5	24,840	15,230			(237,314)	252,544	50,509

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/ Entity
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Construction Machinery Manufacturing	333120	30	20	99,360	60,920			(1,436,878)	1,499,289	74,964
Industrial	Mining Machinery and Equipment Manufacturing	333131	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Printing Machinery and Equipment Manufacturing^	333293	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Other Engine Equipment Manufacturing	333618	5	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Welding and Soldering Equipment Manufacturing	333992	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Electron Tube Manufacturing^	334411	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Bare Printed Circuit Board Manufacturing	334412	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Semiconductor and Related Device Manufacturing	334413	23	16	79,488	48,736			(503,333)	552,526	34,533
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	0	0	0	0			0	0	
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Household Laundry Equipment Manufacturing	335224	13	11	54,648	33,506	(257,544)	4,950	(225,495)	259,001	23,546
Industrial	Other Major Household Appliance Manufacturing	335228	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Motor and Generator Manufacturing	335312	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Storage Battery Manufacturing	335911	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Current-Carrying Wiring Device Manufacturing	335931	1	1	4,968	3,046			(6,799)	9,845	9,845

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/ Entity
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Carbon and Graphite Product Manufacturing	335991	6	5	24,840	15,230			(237,314)	252,544	50,509
Industrial	Automobile Manufacturing	336111	66	33	163,944	100,518	(719,231)	35,836	(1,080,389)	1,180,907	35,785
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	5	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Heavy Duty Truck Manufacturing	336120	8	6	29,808	18,276			(244,113)	262,389	43,731
Industrial	Motor Vehicle Body Manufacturing	336211	8	6	29,808	18,276			(244,113)	262,389	43,731
Industrial	Truck Trailer Manufacturing	336212	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Motor Vehicle Brake System Manufacturing	336340	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Motor Vehicle Metal Stamping	336370	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Other Motor Vehicle Parts Manufacturing	336390	13	9	44,712	27,414			(281,125)	308,539	34,282
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Aircraft Manufacturing	336411	125	99	491,832	301,554	(9,666,667)	53,827	(9,234,955)	9,536,509	96,328
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	8	6	29,808	18,276			(244,113)	262,389	43,731
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	10	6	29,808	18,276			(244,113)	262,389	43,731
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Railroad Rolling Stock Manufacturing	336510	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Ship Building and Repairing	336611	92	57	283,176	173,622	(2,549,443)	107,508	(2,277,333)	2,450,955	42,999
Industrial	Boat Building	336612	123	81	402,408	246,726			(5,900,511)	6,147,690	75,897
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	347	260	1,291,680	791,960	(3,602,566)	337,764	(1,565,842)	2,357,802	9,068
Industrial	Upholstered Household Furniture Manufacturing	337121	2	2	9,936	6,092			(30,213)	36,305	18,153

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/ Entity
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	14	10	49,680	30,460			(304,540)	335,000	33,500
Industrial	Institutional Furniture Manufacturing	337127	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Wood Office Furniture Manufacturing	337211	5	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Office Furniture (except Wood) Manufacturing	337214	19	12	59,616	36,552	(327,616)	6,187	(271,502)	308,054	25,671
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Blind and Shade Manufacturing	337920	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Surgical and Medical Instrument Manufacturing	339112	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Surgical Appliance and Supplies Manufacturing	339113	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Jewelry and Silverware Manufacturing	339910	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Sporting and Athletic Goods Manufacturing	339920	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Office Supplies (except Paper) Manufacturing	339940	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Burial Casket Manufacturing	339995	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	All Other Miscellaneous Manufacturing	339999	5	4	19,872	12,184			(213,899)	226,083	56,521
Commercial	Grain and Field Bean Merchant Wholesalers	424510	1	1	4,968	3,046			(6,799)	9,845	9,845
Commercial	Petroleum Bulk Stations and Terminals	424710	7	4	19,872	12,184			(213,899)	226,083	56,521
Commercial	Scheduled Passenger Air Transportation	481111	2	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	Line-Haul Railroads	482111	1	1	4,968	3,046			(6,799)	9,845	9,845
Energy	Pipeline Transportation of Crude Oil	486110	1	1	4,968	3,046			(6,799)	9,845	9,845
Energy	Pipeline Transportation of Natural Gas	486210	501	284	1,410,912	865,064	(521,806)	392,088	(1,711,663)	2,576,727	9,073
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1	1	4,968	3,046			(6,799)	9,845	9,845
Commercial	Support Activities for Rail Transportation	488210	3	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	Marine Cargo Handling	488320	2	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	General Warehousing and Storage	493110	180	86	427,248	261,956	(2,686,090)	513,176	(1,483,709)	1,745,665	20,298
Commercial	Other Warehousing and Storage	493190	6	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	1	1	4,968	3,046			(6,799)	9,845	9,845
Commercial	Testing Laboratories	541380	2	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	2	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	All Other Support Services	561990	1	1	4,968	3,046			(6,799)	9,845	9,845

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/Entity
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	41	26	129,168	79,196	(2,234,667)	50,592	(2,021,952)	2,101,148	80,813
Waste Treatment	Solid Waste Landfill	562212	522	330	1,639,440	1,005,180			(27,259,614)	28,264,473	85,650
Waste Treatment	Solid Waste Combustors and Incinerators	562213	3	2	9,936	6,092			(30,213)	36,305	18,153
Waste Treatment	Remediation Services	562910	1	1	4,968	3,046			(6,799)	9,845	9,845
Educational Services	Colleges, Universities, and Professional Schools	611310	23	13	64,584	39,598			(496,220)	535,818	41,217
Commercial	Amusement and Theme Parks	713110	1	1	4,968	3,046			(6,799)	9,845	9,845
Commercial	Linen and Uniform Supply	812330	1	1	4,968	3,046			(6,799)	9,845	9,845
Commercial	Industrial Launderers	812332	3	2	9,936	6,092			(30,213)	36,305	18,153

Notes:

One-time facility permitting burden is \$4,968 per facility.

One-time state agency burden is \$3,046 per facility.

Six source categories in the assessed source categories were identified that would not be affected by the change in policy: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating, Secondary Lead, Wool Fiberglass, and Portland Cement.

Out of these six categories, four area source categories are subject to a MACT standard where area sources in these categories are subject to the same HAP requirement for major sources in these categories: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating, and Portland Cement. Because there are no differences in the requirements between major and area sources for these categories, there is no impact of the MM2A policy change on these categories, and they were excluded from the table.

For Table 3-1, two columns—Projected Costs (Savings) and Estimated Cost of Area Source Requirement—are incomplete because for the cost categories without completed RTR modeling files, we only have the extrapolated cost savings for facilities in year 1 and not a breakdown of those cost savings by area source requirement costs or supporting statement cost savings. We have included all of the cost information that is currently available.

The blank cells in the “Average Avoided Cost/Entity” column represent source categories for which there are zero facilities projected to obtain area source status.

NAICS 922140 (Correctional Institutions), NAICS 927110 (Space Research and Technology), NAICS 928110 (National Security) are government/public administration NAICS codes not covered by the 2012 Economic Census and are not included in this table.

NAICS 999999 is an unclassified code and is not included in this table.

Sources: 2012 Economic Census; Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD.

NAICS 2012 and NAICS 2007 (<https://www.census.gov/eos/www/naics/downloadables/downloadables.html>).

Table 3-2 Year 1 Avoided Cost for Affected Sources of the Proposed MM2A Rule Under Alternative Scenario 1 (2014\$)

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/ Entity
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	1	0	0	0			0	0	
Energy	Crude Petroleum and Natural Gas Extraction	211111	120	52	258,336	158,392	(293,598)	21,959	(147,108)	305,500	5,875
Energy	Natural Gas Liquid Extraction	211112	26	11	54,648	33,506			(311,339)	344,845	31,350
Industrial	Iron Ore Mining	212210	9	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Lead Ore and Zinc Ore Mining	212231	1	0	0	0			0	0	
Industrial	Copper Ore and Nickel Ore Mining	212234	1	0	0	0			0	0	
Industrial	All Other Metal Ore Mining	212299	1	0	0	0			0	0	
Industrial	Industrial Sand Mining	212322	3	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Kaolin and Ball Clay Mining	212324	3	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Potash, Soda, and Borate Mineral Mining	212391	6	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	All Other Nonmetallic Mineral Mining	212399	1	0	0	0			0	0	
Energy	Support Activities for Oil and Gas Operations	213112	3	1	4,968	3,046			(6,799)	9,845	9,845
Utilities	Hydroelectric Power Generation	221111	1	0	0	0			0	0	
Utilities	Fossil Fuel Electric Power Generation	221112	334	60	298,080	182,760			(1,933,255)	2,116,015	35,267
Utilities	Biomass Electric Power Generation	221117	5	2	9,936	6,092			(30,213)	36,305	18,153
Utilities	Other Electric Power Generation	221118	1	0	0	0			0	0	
Utilities	Other Electric Power Generation^	221119	8	3	14,904	9,138			(37,012)	46,150	15,383
Utilities	Electric Power Distribution	221122	1	0	0	0			0	0	
Utilities	Natural Gas Distribution	221210	13	5	24,840	15,230			(67,226)	82,456	16,491
Utilities	Water Supply and Irrigation Systems	221310	2	0	0	0			0	0	
Utilities	Sewage Treatment Facilities	221320	19	8	39,744	24,368	(304)	304	3,058	21,310	2,664
Utilities	Steam and Air-Conditioning Supply	221330	22	9	44,712	27,414			(281,125)	308,539	34,282
Industrial	Other Animal Food Manufacturing	311119	1	0	0	0			0	0	
Industrial	Wet Corn Milling	311221	16	0	0	0			0	0	
Industrial	Soybean Processing^	311222	16	0	0	0			0	0	
Industrial	Other Oilseed Processing^	311223	5	0	0	0			0	0	
Industrial	Soybean and Other Oilseed Processing	311224	116	2	9,936	6,092	(78,876)	4,216	(58,632)	64,724	32,362
Industrial	Fats and Oils Refining and Blending	311225	2	0	0	0			0	0	
Industrial	Beet Sugar Manufacturing	311313	11	0	0	0			0	0	
Industrial	Cane Sugar Manufacturing	311314	3	0	0	0			0	0	
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	2	0	0	0			0	0	

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/ Entity
Industrial	Fruit and Vegetable Canning	311421	1	0	0	0			0	0	
Industrial	Specialty Canning	311422	2	0	0	0			0	0	
Industrial	Cheese Manufacturing	311513	2	0	0	0			0	0	
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	3	0	0	0			0	0	
Industrial	Rendering and Meat Byproduct Processing	311613	1	0	0	0			0	0	
Industrial	Commercial Bakeries	311812	2	0	0	0			0	0	
Industrial	Other Snack Food Manufacturing	311919	1	0	0	0			0	0	
Industrial	Coffee and Tea Manufacturing	311920	1	0	0	0			0	0	
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1	0	0	0			0	0	
Industrial	Spice and Extract Manufacturing	311942	4	0	0	0			0	0	
Industrial	All Other Miscellaneous Food Manufacturing	311999	6	0	0	0	0	0	0	0	
Industrial	Breweries	312120	3	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Distilleries	312140	1	0	0	0			0	0	
Industrial	Tobacco Manufacturing	312230	1	0	0	0			0	0	
Industrial	Yarn Spinning Mills^	313111	1	0	0	0			0	0	
Industrial	Thread Mills^	313113	1	0	0	0			0	0	
Industrial	Broadwoven Fabric Mills	313210	2	0	0	0			0	0	
Industrial	Narrow Fabric Mills^	313221	1	0	0	0			0	0	
Industrial	Textile and Fabric Finishing Mills	313310	1	0	0	0			0	0	
Industrial	Broadwoven Fabric Finishing Mills^	313311	3	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Fabric Coating Mills	313320	50	20	99,360	60,920	(261,986)	35,836	(126,925)	187,845	9,392
Industrial	Tire Cord and Tire Fabric Mills^	314992	1	0	0	0			0	0	
Industrial	Leather and Hide Tanning and Finishing	316110	6	5	24,840	15,230	(9,795)	6,324	(9,643)	24,873	4,975
Industrial	Sawmills	321113	61	34	168,912	103,564			(1,095,483)	1,199,047	35,266
Industrial	Wood Preservation	321114	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Softwood Veneer and Plywood Manufacturing	321212	29	17	84,456	51,782			(556,647)	608,429	35,790
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	6	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Reconstituted Wood Product Manufacturing	321219	284	161	799,848	490,406	(851,724)	54,808	(3,794,487)	4,286,217	26,622
Industrial	Wood Window and Door Manufacturing	321911	4	2	9,936	6,092			(30,213)	36,305	18,153

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/Entity
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Pulp Mills	322110	18	0	0	0			0	0	
Industrial	Paper (except Newsprint) Mills	322121	281	0	0	0	0	0	0	0	
Industrial	Newsprint Mills	322122	7	0	0	0			0	0	
Industrial	Paperboard Mills	322130	36	0	0	0			0	0	
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	213	99	491,832	301,554			(1,349,141)	1,651,397	16,681
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	17	0	0	0			0	0	
Industrial	Coated and Laminated Paper Manufacturing^	322222	12	0	0	0			0	0	
Industrial	Sanitary Paper Product Manufacturing	322291	2	0	0	0			0	0	
Industrial	All Other Converted Paper Product Manufacturing	322299	1	0	0	0			0	0	
Industrial	Commercial Lithographic Printing^	323110	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Commercial Printing (except Screen and Books)	323111	188	95	471,960	289,370	(1,485,426)	183,396	(879,138)	1,168,508	12,300
Industrial	Books Printing	323117	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Petroleum Refineries	324110	424	124	616,032	377,704	(19,410,125)	52,700	(20,021,763)	20,399,055	164,509
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	3	0	0	0			0	0	
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	4	0	0	0			0	0	
Industrial	Petrochemical Manufacturing	325110	597	215	1,068,120	654,890	(442,943)	170,971	382,437	271,879	1,265
Industrial	Industrial Gas Manufacturing	325120	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1	0	0	0			0	0	
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	3	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	2	0	0	0			0	0	
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	10	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Alkalies and Chlorine Manufacturing^	325181	4	1	4,968	3,046			(6,705)	10,834	10,834
Industrial	Carbon Black Manufacturing^	325182	21	8	39,744	24,368			(28,711)	52,136	6,517
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	93	31	154,008	94,426			(29,501)	125,303	4,042
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	1	0	0	0			0	0	

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Industrial	Ethyl Alcohol Manufacturing	325193	7	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	2	0	0	0			0	0	
Industrial	All Other Basic Organic Chemical Manufacturing	325199	77	20	99,360	60,920	(393,103)	6,324	(902,769)	963,689	48,184
Industrial	Plastics Material and Resin Manufacturing	325211	833	231	1,147,608	703,626	(11,120,441)	140,112	(32,221,000)	32,925,166	142,533
Industrial	Synthetic Rubber Manufacturing	325212	24	3	14,904	9,138	(1,767)	3,947	11,408	(2,270)	(757)
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	6	2	9,936	6,092	0	0	(30,213)	36,305	18,153
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1	0	0	0			0	0	
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	8	2	9,936	6,092			(215,391)	222,743	111,371
Industrial	Nitrogenous Fertilizer Manufacturing	325311	16	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Phosphatic Fertilizer Manufacturing	325312	30	2	9,936	6,092	0	0	(30,213)	36,305	18,153
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	22	2	9,936	6,092	(65,439)	1,973	(62,250)	68,342	34,171
Industrial	Medicinal and Botanical Manufacturing	325411	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Pharmaceutical Preparation Manufacturing	325412	36	7	34,776	21,322	(801,899)	9,867	(782,175)	803,497	114,785
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1	0	0	0			0	0	
Industrial	Paint and Coating Manufacturing	325510	51	23	114,264	70,058	(2,749,089)	41,442	(2,569,567)	2,639,625	114,766
Industrial	Adhesive Manufacturing	325520	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Surface Active Agent Manufacturing	325613	2	0	0	0			0	0	
Industrial	Toilet Preparation Manufacturing	325620	2	0	0	0			0	0	
Industrial	Explosives Manufacturing	325920	2	0	0	0			0	0	
Industrial	Custom Compounding of Purchased Resins	325991	5	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	10	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	5	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	16	7	34,776	21,322			(250,912)	272,234	38,891
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	12	0	0	0			0	0	

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Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	1	0	0	0			0	0	
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	7	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Polystyrene Foam Product Manufacturing	326140	1	0	0	0			0	0	
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	19	17	84,456	51,782	(46,810)	5,976	78,390	(26,608)	(1,565)
Industrial	Plastics Plumbing Fixture Manufacturing	326191	2	0	0	0			0	0	
Industrial	All Other Plastics Product Manufacturing	326199	148	68	337,824	207,128	(2,218,563)	120,156	(1,952,947)	2,160,075	31,766
Industrial	Tire Manufacturing (except Retreading)	326211	39	18	89,424	54,828			(552,572)	608,695	33,816
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	6	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	2	0	0	0			0	0	
Industrial	All Other Rubber Product Manufacturing	326299	14	5	24,840	15,230	0	0	(67,226)	82,456	16,491
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	4	1	4,968	3,046			(19,411)	23,327	23,327
Industrial	Clay Building Material and Refractories Manufacturing	327120	46	0	0	0			0	0	
Industrial	Clay Refractory Manufacturing^	327124	8	3	14,904	9,138			(51,762)	62,205	20,735
Industrial	Flat Glass Manufacturing	327211	2	0	0	0			0	0	
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	17	7	34,776	21,322	(81,565)	8,432	(78,089)	99,411	14,202
Industrial	Cement Manufacturing	327310	6	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Lime Manufacturing	327410	43	18	89,424	54,828			(265,608)	320,871	17,826
Industrial	Gypsum Product Manufacturing	327420	1	0	0	0			0	0	
Industrial	Abrasive Product Manufacturing	327910	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Mineral Wool Manufacturing	327993	13	4	19,872	12,184	(69,750)	4,216	(79,719)	91,903	22,976
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	2	0	0	0			0	0	
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	72	43	213,624	130,978	(1,410,644)	84,320	(1,042,776)	1,173,754	27,297
Industrial	Iron and Steel Mills^	331111	50	5	24,840	15,230			(67,226)	82,456	16,491
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	1	0	0	0			0	0	
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	3	2	9,936	6,092			(30,213)	36,305	18,153

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Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	5	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Rolled Steel Shape Manufacturing	331221	6	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Primary Aluminum Production^	331312	2	0	0	0			0	0	
Industrial	Alumina Refining and Primary Aluminum Production	331313	16	1	4,968	3,046	0	0	(6,799)	9,845	9,845
Industrial	Secondary Smelting and Alloying of Aluminum	331314	53	20	99,360	60,920	(241,918)	103,491	7,040	53,880	2,694
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	6	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Aluminum Extruded Product Manufacturing^	331316	1	0	0	0			0	0	
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	2	0	0	0			0	0	
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1	0	0	0			0	0	
Industrial	Primary Smelting and Refining of Copper^	331411	0	0	0	0			0	0	
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	2	0	0	0			0	0	
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	3	0	0	0	0	0	0	0	
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1	0	0	0			0	0	
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	3	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	2	0	0	0			0	0	
Industrial	Iron Foundries	331511	83	38	188,784	115,748			(783,033)	898,949	23,657
Industrial	Steel Foundries (except Investment)	331513	2	0	0	0			0	0	
Industrial	Aluminum Die-Casting Foundries^	331521	1	0	0	0			0	0	
Industrial	Aluminum Foundries (except Die-Casting)	331524	2	0	0	0			0	0	
Industrial	Nonferrous Forging	332112	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Hand and Edge Tool Manufacturing^	332212	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Fabricated Structural Metal Manufacturing	332312	1	1	4,968	3,046			(6,799)	9,845	9,845

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Industrial	Metal Window and Door Manufacturing	332321	5	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Sheet Metal Work Manufacturing	332322	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Metal Can Manufacturing	332431	14	7	34,776	21,322	(40,000)	619	(275,480)	296,802	42,400
Industrial	Other Metal Container Manufacturing	332439	4	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Metal Heat Treating	332811	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	436	251	1,246,968	764,546	(10,581,946)	469,306	(8,470,386)	9,234,932	36,793
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Other Fabricated Metal Manufacturing	332990	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Small Arms Ammunition Manufacturing	332992	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Ammunition (except Small Arms) Manufacturing	332993	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Farm Machinery and Equipment Manufacturing	333111	8	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1	0	0	0			0	0	
Industrial	Construction Machinery Manufacturing	333120	30	15	74,520	45,690			(1,036,449)	1,082,074	72,138
Industrial	Mining Machinery and Equipment Manufacturing	333131	2	0	0	0			0	0	
Industrial	Printing Machinery and Equipment Manufacturing^	333293	1	0	0	0			0	0	
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1	0	0	0			0	0	
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1	0	0	0			0	0	
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	1	0	0	0			0	0	
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	1	0	0	0			0	0	
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1	0	0	0			0	0	

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Industrial	Other Engine Equipment Manufacturing	333618	5	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1	0	0	0			0	0	
Industrial	Welding and Soldering Equipment Manufacturing	333992	2	0	0	0			0	0	
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1	0	0	0			0	0	
Industrial	Electron Tube Manufacturing ^A	334411	1	0	0	0			0	0	
Industrial	Bare Printed Circuit Board Manufacturing	334412	1	0	0	0			0	0	
Industrial	Semiconductor and Related Device Manufacturing	334413	23	13	64,584	39,598			(404,796)	445,546	34,273
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	1	0	0	0			0	0	
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	0	0	0	0			0	0	
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Household Laundry Equipment Manufacturing	335224	13	11	54,648	33,506	(257,544)	4,950	(225,495)	259,001	23,546
Industrial	Other Major Household Appliance Manufacturing	335228	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Motor and Generator Manufacturing	335312	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Storage Battery Manufacturing	335911	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Current-Carrying Wiring Device Manufacturing	335931	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Carbon and Graphite Product Manufacturing	335991	6	5	24,840	15,230			(237,314)	252,544	50,509
Industrial	Automobile Manufacturing	336111	66	18	89,424	54,828	(211,538)	10,540	(657,149)	711,977	39,554
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	5	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Heavy Duty Truck Manufacturing	336120	8	5	24,840	15,230			(237,314)	252,544	50,509
Industrial	Motor Vehicle Body Manufacturing	336211	8	5	24,840	15,230			(237,314)	252,544	50,509
Industrial	Truck Trailer Manufacturing	336212	1	1	4,968	3,046			(6,799)	9,845	9,845

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Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Motor Vehicle Brake System Manufacturing	336340	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Motor Vehicle Metal Stamping	336370	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Other Motor Vehicle Parts Manufacturing	336390	13	7	34,776	21,322			(250,912)	272,234	38,891
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Aircraft Manufacturing	336411	125	84	417,312	255,864	(8,222,222)	45,784	(7,872,522)	8,128,386	96,767
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	8	5	24,840	15,230			(237,314)	252,544	50,509
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	10	6	29,808	18,276			(244,113)	262,389	43,731
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Railroad Rolling Stock Manufacturing	336510	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Ship Building and Repairing	336611	92	48	238,464	146,208	(2,149,530)	90,644	(1,951,598)	2,097,806	43,704
Industrial	Boat Building	336612	123	64	317,952	194,944			(4,860,144)	5,055,996	79,000
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	347	238	1,182,384	724,948	(3,299,951)	309,392	(1,436,478)	2,161,426	9,082
Industrial	Upholstered Household Furniture Manufacturing	337121	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	14	9	44,712	27,414			(281,125)	308,539	34,282
Industrial	Institutional Furniture Manufacturing	337127	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Wood Office Furniture Manufacturing	337211	5	4	19,872	12,184			(213,899)	226,083	56,521

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/Entity
Industrial	Office Furniture (except Wood) Manufacturing	337214	19	8	39,744	24,368	(196,569)	3,712	(174,987)	199,355	24,919
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Blind and Shade Manufacturing	337920	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Surgical and Medical Instrument Manufacturing	339112	2	0	0	0			0	0	
Industrial	Surgical Appliance and Supplies Manufacturing	339113	1	0	0	0			0	0	
Industrial	Jewelry and Silverware Manufacturing	339910	1	0	0	0			0	0	
Industrial	Sporting and Athletic Goods Manufacturing	339920	1	0	0	0			0	0	
Industrial	Office Supplies (except Paper) Manufacturing	339940	1	0	0	0			0	0	
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	2	0	0	0			0	0	
Industrial	Burial Casket Manufacturing	339995	3	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	All Other Miscellaneous Manufacturing	339999	5	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	Grain and Field Bean Merchant Wholesalers	424510	1	0	0	0			0	0	
Commercial	Petroleum Bulk Stations and Terminals	424710	7	3	14,904	9,138			(37,012)	46,150	15,383
Commercial	Scheduled Passenger Air Transportation	481111	2	0	0	0			0	0	
Commercial	Line-Haul Railroads	482111	1	0	0	0			0	0	
Energy	Pipeline Transportation of Crude Oil	486110	1	0	0	0			0	0	
Energy	Pipeline Transportation of Natural Gas	486210	501	229	1,137,672	697,534	(421,167)	316,200	(1,405,171)	2,102,705	9,182
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1	0	0	0			0	0	
Commercial	Support Activities for Rail Transportation	488210	3	1	4,968	3,046			(6,799)	9,845	9,845
Commercial	Marine Cargo Handling	488320	2	0	0	0			0	0	
Commercial	General Warehousing and Storage	493110	180	75	372,600	228,450	(2,342,520)	447,537	(1,293,933)	1,522,383	20,298
Commercial	Other Warehousing and Storage	493190	6	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	1	0	0	0			0	0	
Commercial	Testing Laboratories	541380	2	0	0	0			0	0	
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^^^	541715	2	0	0	0			0	0	
Commercial	All Other Support Services	561990	1	0	0	0			0	0	

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost/Entity
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	41	21	104,328	63,966	(1,769,111)	40,052	(1,607,007)	1,670,973	79,570
Waste Treatment	Solid Waste Landfill	562212	522	262	1,301,616	798,052			(21,625,090)	22,423,142	85,585
Waste Treatment	Solid Waste Combustors and Incinerators	562213	3	2	9,936	6,092			(30,213)	36,305	18,153
Waste Treatment	Remediation Services	562910	1	1	4,968	3,046			(6,799)	9,845	9,845
Educational Services	Colleges, Universities, and Professional Schools	611310	23	9	44,712	27,414			(281,125)	308,539	34,282
Commercial	Amusement and Theme Parks	713110	1	0	0	0			0	0	
Commercial	Linen and Uniform Supply	812330	1	0	0	0			0	0	
Commercial	Industrial Launderers	812332	3	1	4,968	3,046			(6,799)	9,845	9,845

Notes:

One-time facility permitting burden is \$4,968 per facility.

One-time state agency burden is \$3,046 per facility.

Six source categories in the assessed source categories were identified that would not be affected by the change in policy: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating, Secondary Lead, Wool Fiberglass, and Portland Cement.

Out of these six categories, four area source categories are subject to a MACT standard where area sources in these categories are subject to the same HAP requirement for major sources in these categories: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating and Portland Cement. Because there are no differences in the requirements between major and area sources for these categories, there is no impact of the MM2A policy change on these categories and they were excluded from the table.

For Table 3-2, two columns—Projected Costs Savings and Estimated Cost of Area Source Requirements—are incomplete because for the cost categories without completed RTR modeling files, we only have the extrapolated cost or savings for facilities in year 1 and not a breakdown of those cost savings by area source requirement costs or supporting statement cost savings. We have included all of the cost information that is currently available.

The blank cells in the “Average Avoided Cost/Entity” column represent source categories for which there are zero facilities projected to obtain area source status.

NAICS 922140 (Correctional Institutions), NAICS 927110 (Space Research and Technology), NAICS 928110 (National Security) are government/public administration NAICS codes not covered by the Census. Hence, we have not included them in this table.

NAICS 999999 is an unclassified code and therefore, we have not included it in this table.

Sources: 2012 Economic Census; Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD.

NAICS 2012 and NAICS 2007 (<https://www.census.gov/eos/www/naics/downloadables/downloadables.html>).

Table 3-3 Year 1 Avoided Cost for Affected Sources of the Proposed MM2A Rule Under Alternative Scenario 2 (2014\$)

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost Entity
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	1	1	4,968	3,046			(6,799)	9,845	9,845
Energy	Crude Petroleum and Natural Gas Extraction	211111	120	72	357,696	219,312	(408,484)	30,551	(139,362)	358,674	4,982
Energy	Natural Gas Liquid Extraction	211112	26	17	84,456	51,782			(540,032)	591,814	34,813
Industrial	Iron Ore Mining	212210	9	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Lead Ore and Zinc Ore Mining	212231	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Copper Ore and Nickel Ore Mining	212234	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	All Other Metal Ore Mining	212299	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Industrial Sand Mining	212322	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Kaolin and Ball Clay Mining	212324	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Potash, Soda, and Borate Mineral Mining	212391	6	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	All Other Nonmetallic Mineral Mining	212399	1	1	4,968	3,046			(6,799)	9,845	9,845
Energy	Support Activities for Oil and Gas Operations	213112	3	2	9,936	6,092			(30,213)	36,305	18,153
Utilities	Hydroelectric Power Generation	221111	1	1	4,968	3,046			(6,799)	9,845	9,845
Utilities	Fossil Fuel Electric Power Generation	221112	334	82	407,376	249,772			(2,539,317)	2,789,089	34,013
Utilities	Biomass Electric Power Generation	221117	5	4	19,872	12,184			(213,899)	226,083	56,521
Utilities	Other Electric Power Generation	221118	1	1	4,968	3,046			(6,799)	9,845	9,845
Utilities	Other Electric Power Generation^	221119	8	5	24,840	15,230			(237,314)	252,544	50,509
Utilities	Electric Power Distribution	221122	1	1	4,968	3,046			(6,799)	9,845	9,845
Utilities	Natural Gas Distribution	221210	13	7	34,776	21,322			(250,912)	272,234	38,891
Utilities	Water Supply and Irrigation Systems	221310	2	2	9,936	6,092			(30,213)	36,305	18,153
Utilities	Sewage Treatment Facilities	221320	19	11	54,648	33,506	(425)	425	(157,801)	191,307	17,392
Utilities	Steam and Air-Conditioning Supply	221330	22	13	64,584	39,598			(326,132)	365,730	28,133
Industrial	Other Animal Food Manufacturing	311119	1	0	0	0			0	0	
Industrial	Wet Corn Milling	311221	16	0	0	0			0	0	
Industrial	Soybean Processing^	311222	16	0	0	0			0	0	
Industrial	Other Oilseed Processing^	311223	5	0	0	0			0	0	
Industrial	Soybean and Other Oilseed Processing	311224	116	2	9,936	6,092	(78,876)	4,216	(58,632)	64,724	32,362
Industrial	Fats and Oils Refining and Blending	311225	2	0	0	0			0	0	
Industrial	Beet Sugar Manufacturing	311313	11	0	0	0			0	0	

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost Entity
Industrial	Cane Sugar Manufacturing	311314	3	0	0	0			0	0	
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	2	0	0	0			0	0	
Industrial	Fruit and Vegetable Canning	311421	1	0	0	0			0	0	
Industrial	Specialty Canning	311422	2	0	0	0			0	0	
Industrial	Cheese Manufacturing	311513	2	0	0	0			0	0	
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	3	0	0	0			0	0	
Industrial	Rendering and Meat Byproduct Processing	311613	1	0	0	0			0	0	
Industrial	Commercial Bakeries	311812	2	0	0	0			0	0	
Industrial	Other Snack Food Manufacturing	311919	1	0	0	0			0	0	
Industrial	Coffee and Tea Manufacturing	311920	1	0	0	0			0	0	
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1	0	0	0			0	0	
Industrial	Spice and Extract Manufacturing	311942	4	0	0	0			0	0	
Industrial	All Other Miscellaneous Food Manufacturing	311999	6	0	0	0	0	0	0	0	
Industrial	Breweries	312120	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Distilleries	312140	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Tobacco Manufacturing	312230	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Yarn Spinning Mills^	313111	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Thread Mills^	313113	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Broadwoven Fabric Mills	313210	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Narrow Fabric Mills^	313221	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Textile and Fabric Finishing Mills	313310	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Broadwoven Fabric Finishing Mills^	313311	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Fabric Coating Mills	313320	50	34	168,912	103,564	(446,918)	61,132	(374,078)	477,642	14,048
Industrial	Tire Cord and Tire Fabric Mills^	314992	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Leather and Hide Tanning and Finishing	316110	6	5	24,840	15,230	(9,795)	6,324	(9,643)	24,873	4,975
Industrial	Sawmills	321113	61	45	223,560	137,070			(1,406,821)	1,543,891	34,309
Industrial	Wood Preservation	321114	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	3	2	9,936	6,092			(30,213)	36,305	18,153

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost Entity
Industrial	Softwood Veneer and Plywood Manufacturing	321212	29	21	104,328	63,966			(600,458)	664,424	31,639
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	6	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Reconstituted Wood Product Manufacturing	321219	284	211	1,048,248	642,706	(1,113,793)	71,672	(5,030,674)	5,674,175	26,892
Industrial	Wood Window and Door Manufacturing	321911	4	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	4	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Pulp Mills	322110	18	0	0	0			0	0	
Industrial	Paper (except Newsprint) Mills	322121	281	1	4,968	3,046	(111,315)	2,108	(101,193)	104,239	104,239
Industrial	Newsprint Mills	322122	7	0	0	0			0	0	
Industrial	Paperboard Mills	322130	36	0	0	0			0	0	
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	213	157	779,976	478,222			(2,066,429)	2,544,417	16,206
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	17	0	0	0			0	0	
Industrial	Coated and Laminated Paper Manufacturing^	322222	12	0	0	0			0	0	
Industrial	Sanitary Paper Product Manufacturing	322291	2	0	0	0			0	0	
Industrial	All Other Converted Paper Product Manufacturing	322299	1	0	0	0			0	0	
Industrial	Commercial Lithographic Printing^	323110	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Commercial Printing (except Screen and Books)	323111	188	124	616,032	377,704	(1,963,494)	242,420	(1,080,589)	1,458,293	11,760
Industrial	Books Printing	323117	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Petroleum Refineries	324110	424	185	919,080	563,510	(30,329,425)	84,320	(31,349,251)	31,912,371	172,499
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	3	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Petrochemical Manufacturing	325110	597	283	1,405,944	862,018	(503,933)	223,402	467,601	394,557	1,394
Industrial	Industrial Gas Manufacturing	325120	4	1	4,968	3,046			(6,799)	9,845	9,845

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost Entity
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1	0	0	0			0	0	
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	3	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	2	0	0	0			0	0	
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	10	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Alkalies and Chlorine Manufacturing^	325181	4	1	4,968	3,046			(6,914)	11,388	11,388
Industrial	Carbon Black Manufacturing^	325182	21	9	44,712	27,414			(32,061)	60,991	6,777
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	93	42	208,656	127,932			(76,462)	205,885	4,902
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	1	0	0	0			0	0	
Industrial	Ethyl Alcohol Manufacturing	325193	7	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	2	0	0	0			0	0	
Industrial	All Other Basic Organic Chemical Manufacturing	325199	77	32	158,976	97,472	(655,172)	10,540	(1,449,134)	1,546,606	48,331
Industrial	Plastics Material and Resin Manufacturing	325211	833	412	2,046,816	1,254,952	(20,657,770)	262,464	(57,509,923)	58,764,643	142,633
Industrial	Synthetic Rubber Manufacturing	325212	24	4	19,872	12,184	(2,651)	5,920	20,512	(8,328)	(2,082)
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	6	2	9,936	6,092	0	0	(30,213)	36,305	18,153
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1	0	0	0			0	0	
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	8	3	14,904	9,138			(373,133)	383,762	127,921
Industrial	Nitrogenous Fertilizer Manufacturing	325311	16	7	34,776	21,322			(250,912)	272,234	38,891
Industrial	Phosphatic Fertilizer Manufacturing	325312	30	3	14,904	9,138	0	0	(37,012)	46,150	15,383
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	22	6	29,808	18,276	(327,193)	9,867	(284,055)	302,331	50,389
Industrial	Medicinal and Botanical Manufacturing	325411	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Pharmaceutical Preparation Manufacturing	325412	36	15	74,520	45,690	(1,924,556)	23,681	(1,841,720)	1,887,410	125,827

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost Entity
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1	0	0	0			0	0	
Industrial	Paint and Coating Manufacturing	325510	51	34	168,912	103,564	(4,189,088)	63,149	(3,899,704)	4,003,268	117,743
Industrial	Adhesive Manufacturing	325520	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Surface Active Agent Manufacturing	325613	2	0	0	0			0	0	
Industrial	Toilet Preparation Manufacturing	325620	2	0	0	0			0	0	
Industrial	Explosives Manufacturing	325920	2	0	0	0			0	0	
Industrial	Custom Compounding of Purchased Resins	325991	5	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	4	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	10	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	5	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	16	10	49,680	30,460			(287,924)	318,384	31,838
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	12	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	7	5	24,840	15,230			(220,698)	235,928	47,186
Industrial	Polystyrene Foam Product Manufacturing	326140	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	19	19	94,392	57,874	(46,810)	5,976	48,176	9,698	510
Industrial	Plastics Plumbing Fixture Manufacturing	326191	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	All Other Plastics Product Manufacturing	326199	148	101	501,768	307,646	(3,269,461)	177,072	(2,975,860)	3,283,506	32,510
Industrial	Tire Manufacturing (except Retreading)	326211	39	27	134,136	82,242			(726,159)	808,066	29,928
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	6	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	All Other Rubber Product Manufacturing	326299	14	8	39,744	24,368	0	0	(274,326)	298,694	37,337

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost Entity
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	4	3	14,904	9,138			(28,410)	36,025	12,008
Industrial	Clay Building Material and Refractories Manufacturing	327120	46	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Clay Refractory Manufacturing^	327124	8	4	19,872	12,184			(57,630)	69,814	17,453
Industrial	Flat Glass Manufacturing	327211	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	17	11	54,648	33,506	(101,956)	10,540	(295,459)	328,965	29,906
Industrial	Cement Manufacturing	327310	6	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Lime Manufacturing	327410	43	22	109,296	67,012			(318,363)	385,375	17,517
Industrial	Gypsum Product Manufacturing	327420	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Abrasive Product Manufacturing	327910	4	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Mineral Wool Manufacturing	327993	13	6	29,808	18,276	(69,750)	4,216	(263,405)	281,681	46,947
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	72	50	248,400	152,300	(1,586,975)	94,860	(1,368,798)	1,521,098	30,422
Industrial	Iron and Steel Mills^	331111	50	6	29,808	18,276			(244,113)	262,389	43,731
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	5	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Rolled Steel Shape Manufacturing	331221	6	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Primary Aluminum Production^	331312	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Alumina Refining and Primary Aluminum Production	331313	16	2	9,936	6,092	0	0	(30,213)	36,305	18,153
Industrial	Secondary Smelting and Alloying of Aluminum	331314	53	27	134,136	82,242	(318,314)	136,172	(12,005)	94,247	3,491
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	6	4	19,872	12,184			(213,899)	226,083	56,521
Industrial	Aluminum Extruded Product Manufacturing^	331316	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	2	2	9,936	6,092			(30,213)	36,305	18,153

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost Entity
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Primary Smelting and Refining of Copper^	331411	0	0	0	0			0	0	
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	2	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	3	2	9,936	6,092	0	0	(30,213)	36,305	18,153
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Iron Foundries	331511	83	46	228,528	140,116			(879,177)	1,019,389	22,161
Industrial	Steel Foundries (except Investment)	331513	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Aluminum Die-Casting Foundries^	331521	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Aluminum Foundries (except Die-Casting)	331524	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Nonferrous Forging	332112	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Hand and Edge Tool Manufacturing^	332212	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Fabricated Structural Metal Manufacturing	332312	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Metal Window and Door Manufacturing	332321	5	6	29,808	18,276			(244,113)	262,389	43,731
Industrial	Sheet Metal Work Manufacturing	332322	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Metal Can Manufacturing	332431	14	11	54,648	33,506	(120,000)	1,856	(368,428)	401,934	36,539
Industrial	Other Metal Container Manufacturing	332439	4	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	1	1	4,968	3,046			(6,799)	9,845	9,845

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost Entity
Industrial	Metal Heat Treating	332811	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	436	371	1,843,128	1,130,066	(15,574,742)	690,257	(12,572,747)	13,702,813	36,935
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	3	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Other Fabricated Metal Manufacturing	332990	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Small Arms Ammunition Manufacturing	332992	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Ammunition (except Small Arms) Manufacturing	332993	3	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	3	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Farm Machinery and Equipment Manufacturing	333111	8	5	24,840	15,230			(237,314)	252,544	50,509
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Construction Machinery Manufacturing	333120	30	23	114,264	70,058			(1,570,336)	1,640,523	71,327
Industrial	Mining Machinery and Equipment Manufacturing	333131	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Printing Machinery and Equipment Manufacturing^	333293	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Other Engine Equipment Manufacturing	333618	5	4	19,872	12,184			(213,899)	226,083	56,521

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost Entity
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Welding and Soldering Equipment Manufacturing	333992	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Electron Tube Manufacturing^	334411	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Bare Printed Circuit Board Manufacturing	334412	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Semiconductor and Related Device Manufacturing	334413	23	18	89,424	54,828			(560,863)	616,297	34,239
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	0	0	0	0			0	0	
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Household Laundry Equipment Manufacturing	335224	13	11	54,648	33,506	(257,544)	4,950	(225,495)	259,001	23,546
Industrial	Other Major Household Appliance Manufacturing	335228	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Motor and Generator Manufacturing	335312	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Storage Battery Manufacturing	335911	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Current-Carrying Wiring Device Manufacturing	335931	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Carbon and Graphite Product Manufacturing	335991	6	5	24,840	15,230			(237,314)	252,544	50,509
Industrial	Automobile Manufacturing	336111	66	37	183,816	112,702	(803,846)	40,052	(1,174,974)	1,287,676	34,802
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	5	5	24,840	15,230			(237,314)	252,544	50,509

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost Entity
Industrial	Heavy Duty Truck Manufacturing	336120	8	6	29,808	18,276			(244,113)	262,389	43,731
Industrial	Motor Vehicle Body Manufacturing	336211	8	6	29,808	18,276			(244,113)	262,389	43,731
Industrial	Truck Trailer Manufacturing	336212	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	3	3	14,904	9,138			(37,012)	46,150	15,383
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Motor Vehicle Brake System Manufacturing	336340	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Motor Vehicle Metal Stamping	336370	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Other Motor Vehicle Parts Manufacturing	336390	13	9	44,712	27,414			(281,125)	308,539	34,282
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Aircraft Manufacturing	336411	125	107	531,576	325,922	(10,222,222)	56,921	(9,954,447)	10,280,369	96,078
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	8	6	29,808	18,276			(244,113)	262,389	43,731
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	10	7	34,776	21,322			(250,912)	272,234	38,891
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Railroad Rolling Stock Manufacturing	336510	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Ship Building and Repairing	336611	92	74	367,632	225,404	(3,399,257)	143,344	(2,955,074)	3,180,478	42,979
Industrial	Boat Building	336612	123	94	466,992	286,324			(6,547,907)	6,835,463	72,718
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	347	289	1,435,752	880,294	(3,991,643)	374,242	(1,885,749)	2,766,043	9,571

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost Entity
Industrial	Upholstered Household Furniture Manufacturing	337121	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	14	12	59,616	36,552			(488,226)	524,778	43,731
Industrial	Institutional Furniture Manufacturing	337127	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Wood Office Furniture Manufacturing	337211	5	6	29,808	18,276			(244,113)	262,389	43,731
Industrial	Office Furniture (except Wood) Manufacturing	337214	19	17	84,456	51,782	(458,662)	8,662	(374,817)	426,599	25,094
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Blind and Shade Manufacturing	337920	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Surgical and Medical Instrument Manufacturing	339112	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Surgical Appliance and Supplies Manufacturing	339113	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Jewelry and Silverware Manufacturing	339910	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Sporting and Athletic Goods Manufacturing	339920	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Office Supplies (except Paper) Manufacturing	339940	1	1	4,968	3,046			(6,799)	9,845	9,845
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	2	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	Burial Casket Manufacturing	339995	3	2	9,936	6,092			(30,213)	36,305	18,153
Industrial	All Other Miscellaneous Manufacturing	339999	5	4	19,872	12,184			(213,899)	226,083	56,521
Commercial	Grain and Field Bean Merchant Wholesalers	424510	1	1	4,968	3,046			(6,799)	9,845	9,845
Commercial	Petroleum Bulk Stations and Terminals	424710	7	4	19,872	12,184			(213,899)	226,083	56,521
Commercial	Scheduled Passenger Air Transportation	481111	2	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	Line-Haul Railroads	482111	1	1	4,968	3,046			(6,799)	9,845	9,845
Energy	Pipeline Transportation of Crude Oil	486110	1	1	4,968	3,046			(6,799)	9,845	9,845
Energy	Pipeline Transportation of Natural Gas	486210	501	326	1,619,568	992,996	(600,081)	451,112	(1,854,873)	2,847,869	8,736
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1	1	4,968	3,046			(6,799)	9,845	9,845

Sector	Source Category	NAICS	Facilities		Permitting Cost (\$)		\$/Year		Cost (\$)		
			Category Subject to MACT	Projected to Obtain Area Source Status	Facility	State Agency	Projected Costs (Savings)	Estimated Cost of Area Source Requirement	Projected Net Costs (Savings) (year 1)	Avoided Costs in Year 1 (excluding permitting cost to state agency)	Average Avoided Cost Entity
Commercial	Support Activities for Rail Transportation	488210	3	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	Marine Cargo Handling	488320	2	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	General Warehousing and Storage	493110	180	108	536,544	328,968	(3,310,762)	632,519	(1,858,972)	2,187,940	20,259
Commercial	Other Warehousing and Storage	493190	6	4	19,872	12,184			(213,899)	226,083	56,521
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	1	1	4,968	3,046			(6,799)	9,845	9,845
Commercial	Testing Laboratories	541380	2	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	2	2	9,936	6,092			(30,213)	36,305	18,153
Commercial	All Other Support Services	561990	1	1	4,968	3,046			(6,799)	9,845	9,845
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	41	32	158,976	97,472	(2,700,222)	61,132	(2,443,696)	2,541,168	79,412
Waste Treatment	Solid Waste Landfill	562212	522	399	1,982,232	1,215,354			(32,917,552)	34,132,265	85,545
Waste Treatment	Solid Waste Combustors and Incinerators	562213	3	3	14,904	9,138			(37,012)	46,150	15,383
Waste Treatment	Remediation Services	562910	1	1	4,968	3,046			(6,799)	9,845	9,845
Educational Services	Colleges, Universities, and Professional Schools	611310	23	15	74,520	45,690			(526,434)	572,124	38,142
Commercial	Amusement and Theme Parks	713110	1	1	4,968	3,046			(6,799)	9,845	9,845
Commercial	Linen and Uniform Supply	812330	1	1	4,968	3,046			(6,799)	9,845	9,845
Commercial	Industrial Launderers	812332	3	2	9,936	6,092			(30,213)	36,305	18,153

Notes:

One-time facility permitting burden is \$4,968 per facility.

One-time state agency burden is \$3,046 per facility.

Six source categories in the assessed source categories were identified that would not be affected by the change in policy: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating, Secondary Lead, Wool Fiberglass, and Portland Cement.

Out of these six categories, four area source categories are subject to a MACT standard where area sources in these categories are subject to the same HAP requirement for major sources in these categories: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating and Portland Cement. Because there are no differences in the requirements between major and area sources for these categories, there is no impact of the MM2A policy change on these categories and they were excluded from the table.

For Table 3-3, two columns—Projected Costs Savings and Estimated Cost of Area Source Requirements—are incomplete because for the cost categories without completed RTR modeling files, we only have the extrapolated cost or savings for facilities in year 1 and not a breakdown of those cost savings by area source requirement costs or supporting statement cost savings. We have included all of the cost information that is currently available.

The blank cells in the “Average Avoided Cost/Entity” column represent source categories for which there are zero facilities projected to obtain area source status.

For the not directly assessed Source Category “Pulp & Paper (non-combust) MACT” (NAICS 322121), one facility is extrapolated to obtain area source status. However, in the estimation of Extrapolated Costs (Savings), “No facilities are expected to be area sources.” We assume the same when calculating the number of facilities expected to obtain area source status for this not directly assessed category.

NAICS 922140 (Correctional Institutions), NAICS 927110 (Space Research and Technology), NAICS 928110 (National Security) are government/public administration NAICS codes not covered by the Census. Hence, we have not included them in this table.

NAICS 999999 is an unclassified code and therefore, we have not included it in this table.

Sources: 2012 Economic Census, NAICS 2012, NAICS 2007; Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD.

NAICS 2012 and NAICS 2007 (<https://www.census.gov/eos/www/naics/downloadables/downloadables.html>).

3.2 Year 2 Avoided Cost for Sources Affected by the Proposed MM2A Rule

With the proposed MM2A rule, in year 2, there will be no area source permitting costs to the facility or the state agency. This is because it is assumed that the permitting changes are all completed year 1 and there is no permitting action in year 2. Therefore, the only costs to the affected facilities in year 2 are the area source burden requirements. For the categories with completed RTR modeling files, the annual projected cost savings in year 2 are the annual supporting statement costs for the facilities expected to obtain area source status. The avoided costs in year 2 are the sum of the estimated cost of area source requirements and the annual projected cost savings from not having to comply with the major source NESHAP rule.

For the categories without completed RTR modeling files, the EPA matched used 3-digit NAICS codes to match each extrapolated category to the directly assessed source categories with RTR data. Then, the EPA calculated the sum of projected cost savings in year 2 of the source categories that were matched to the extrapolated category. Next, the EPA determined the average cost savings for year 2 for the matched source categories and used these to determine the cost savings for the extrapolated category in year 2. The May, 2019 ERG Cost Analysis Memorandum describes how these categories were assessed in greater detail. RICE was not included in the cost analysis because these are typically co-located with other major HAP sources and any cost savings for these engines would be included in the other major source cost savings. Thus, we attempted to avoid double-counting of any cost savings for RICE to the extent possible.

Table 3-4 shows the avoided costs in year 2 for the categories with completed RTR modeling files and the extrapolated categories. The average avoided cost per entity is calculated using the average projected net cost savings in year 2 for the facilities projected to obtain area source status. Table 3-5 shows the avoided costs in year 2 under the 50% emissions cutoff scenario. Table 3-6 shows the avoided costs in year 2 under the 125% emissions cutoff scenario.

Table 3-4 Year 2 Avoided Cost for Affected Sources of the Proposed MM2A Rule Under the Primary Scenario (2014\$)

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	1	1			14,813	14,813
Energy	Crude Petroleum and Natural Gas Extraction	211111	120	64	(357,423)	26,732	669,129	10,455
Energy	Natural Gas Liquid Extraction	211112	26	15			646,644	43,110
Industrial	Iron Ore Mining	212210	9	2			46,241	23,121
Industrial	Lead Ore and Zinc Ore Mining	212231	1	1			14,813	14,813
Industrial	Copper Ore and Nickel Ore Mining	212234	1	1			14,813	14,813
Industrial	All Other Metal Ore Mining	212299	1	1			14,813	14,813
Industrial	Industrial Sand Mining	212322	3	2			46,241	23,121
Industrial	Kaolin and Ball Clay Mining	212324	3	2			46,241	23,121
Industrial	Potash, Soda, and Borate Mineral Mining	212391	6	4			245,955	61,489
Industrial	All Other Nonmetallic Mineral Mining	212399	1	1			14,813	14,813
Energy	Support Activities for Oil and Gas Operations	213112	3	2			46,241	23,121
Utilities	Hydroelectric Power Generation	221111	1	1			14,813	14,813
Utilities	Fossil Fuel Electric Power Generation	221112	334	72			2,828,401	39,283
Utilities	Biomass Electric Power Generation	221117	5	4			245,955	61,489
Utilities	Other Electric Power Generation	221118	1	1			14,813	14,813
Utilities	Other Electric Power Generation^	221119	8	5			277,384	55,477
Utilities	Electric Power Distribution	221122	1	1			14,813	14,813
Utilities	Natural Gas Distribution	221210	13	7			307,010	43,859
Utilities	Water Supply and Irrigation Systems	221310	2	2			46,241	23,121
Utilities	Sewage Treatment Facilities	221320	19	10	(365)	365	245,955	24,596
Utilities	Steam and Air-Conditioning Supply	221330	22	12			415,501	34,625
Industrial	Other Animal Food Manufacturing	311119	1	0			0	
Industrial	Wet Corn Milling	311221	16	2			46,241	23,121
Industrial	Soybean Processing^	311222	16	2			46,241	23,121
Industrial	Other Oilseed Processing^	311223	5	0			0	
Industrial	Soybean and Other Oilseed Processing	311224	116	14	(433,820)	23,188	471,687	33,692
Industrial	Fats and Oils Refining and Blending	311225	2	0			0	
Industrial	Beet Sugar Manufacturing	311313	11	1			14,813	14,813
Industrial	Cane Sugar Manufacturing	311314	3	0			0	
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	2	0			0	
Industrial	Fruit and Vegetable Canning	311421	1	0			0	
Industrial	Specialty Canning	311422	2	0			0	
Industrial	Cheese Manufacturing	311513	2	0			0	

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	3	0			0	
Industrial	Rendering and Meat Byproduct Processing	311613	1	0			0	
Industrial	Commercial Bakeries	311812	2	0			0	
Industrial	Other Snack Food Manufacturing	311919	1	0			0	
Industrial	Coffee and Tea Manufacturing	311920	1	0			0	
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1	0			0	
Industrial	Spice and Extract Manufacturing	311942	4	0			0	
Industrial	All Other Miscellaneous Food Manufacturing	311999	6	0	0	0	0	
Industrial	Breweries	312120	3	2			46,241	23,121
Industrial	Distilleries	312140	1	1			14,813	14,813
Industrial	Tobacco Manufacturing	312230	1	1			14,813	14,813
Industrial	Yarn Spinning Mills^	313111	1	1			14,813	14,813
Industrial	Thread Mills^	313113	1	1			14,813	14,813
Industrial	Broadwoven Fabric Mills	313210	2	2			46,241	23,121
Industrial	Narrow Fabric Mills^	313221	1	1			14,813	14,813
Industrial	Textile and Fabric Finishing Mills	313310	1	1			14,813	14,813
Industrial	Broadwoven Fabric Finishing Mills^	313311	3	2			46,241	23,121
Industrial	Fabric Coating Mills	313320	50	29	(385,274)	52,700	578,529	19,949
Industrial	Tire Cord and Tire Fabric Mills^	314992	1	1			14,813	14,813
Industrial	Leather and Hide Tanning and Finishing	316110	6	5	(9,795)	6,324	49,713	9,943
Industrial	Sawmills	321113	61	43			1,721,210	40,028
Industrial	Wood Preservation	321114	3	2			46,241	23,121
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	3	2			46,241	23,121
Industrial	Softwood Veneer and Plywood Manufacturing	321212	29	21			768,752	36,607
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	6	4			245,955	61,489
Industrial	Reconstituted Wood Product Manufacturing	321219	284	205	(1,081,034)	69,564	6,540,994	31,907
Industrial	Wood Window and Door Manufacturing	321911	4	2			46,241	23,121
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	4	2			46,241	23,121
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	3	2			46,241	23,121
Industrial	Pulp Mills	322110	18	0			0	
Industrial	Paper (except Newsprint) Mills	322121	281	0	0	0	0	
Industrial	Newsprint Mills	322122	7	0			0	
Industrial	Paperboard Mills	322130	36	0			0	
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	213	132			2,764,390	20,942

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	17	0			0	
Industrial	Coated and Laminated Paper Manufacturing^	322222	12	0			0	
Industrial	Sanitary Paper Product Manufacturing	322291	2	0			0	
Industrial	All Other Converted Paper Product Manufacturing	322299	1	0			0	
Industrial	Commercial Lithographic Printing^	323110	1	1			14,813	14,813
Industrial	Commercial Printing (except Screen and Books)	323111	188	110	(1,724,460)	212,908	1,864,803	16,953
Industrial	Books Printing	323117	3	2			46,241	23,121
Industrial	Petroleum Refineries	324110	424	149	(22,515,745)	61,132	24,422,518	163,910
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	3	0			0	
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	4	0			0	
Industrial	Petrochemical Manufacturing	325110	597	238	(536,852)	189,809	1,528,788	6,423
Industrial	Industrial Gas Manufacturing	325120	4	1			14,813	14,813
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1	0			0	
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	3	1			14,813	14,813
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	2	0			0	
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	10	3			61,054	20,351
Industrial	Alkalies and Chlorine Manufacturing^	325181	4	1			17,883	17,883
Industrial	Carbon Black Manufacturing^	325182	21	8			95,368	11,921
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	93	35			321,498	9,186
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	1	0			0	
Industrial	Ethyl Alcohol Manufacturing	325193	7	2			46,241	23,121
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	2	0			0	
Industrial	All Other Basic Organic Chemical Manufacturing	325199	77	24	(393,103)	6,324	1,155,532	48,147
Industrial	Plastics Material and Resin Manufacturing	325211	833	307	(14,974,394)	189,448	45,228,966	147,326
Industrial	Synthetic Rubber Manufacturing	325212	24	4	(2,651)	5,920	11,544	2,886
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	6	2	0	0	46,241	23,121
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1	0			0	
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	8	3			306,200	102,067
Industrial	Nitrogenous Fertilizer Manufacturing	325311	16	6			292,197	48,699
Industrial	Phosphatic Fertilizer Manufacturing	325312	30	2	0	0	46,241	23,121
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	22	6	(327,193)	9,867	332,139	55,357
Industrial	Medicinal and Botanical Manufacturing	325411	4	1			14,813	14,813
Industrial	Pharmaceutical Preparation Manufacturing	325412	36	11	(1,283,038)	15,787	1,328,305	120,755
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1	0			0	

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Paint and Coating Manufacturing	325510	51	26	(3,141,816)	47,362	3,140,695	120,796
Industrial	Adhesive Manufacturing	325520	4	1			14,813	14,813
Industrial	Surface Active Agent Manufacturing	325613	2	0			0	
Industrial	Toilet Preparation Manufacturing	325620	2	0			0	
Industrial	Explosives Manufacturing	325920	2	0			0	
Industrial	Custom Compounding of Purchased Resins	325991	5	2			46,241	23,121
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	4	1			14,813	14,813
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	10	3			61,054	20,351
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	5	4			245,955	61,489
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	16	10			368,064	36,806
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	12	1			14,813	14,813
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	1	1			14,813	14,813
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	7	5			260,768	52,154
Industrial	Polystyrene Foam Product Manufacturing	326140	1	1			14,813	14,813
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	19	19	(46,810)	5,976	104,090	5,478
Industrial	Plastics Plumbing Fixture Manufacturing	326191	2	2			46,241	23,121
Industrial	All Other Plastics Product Manufacturing	326199	148	101	(3,269,461)	177,072	3,785,274	37,478
Industrial	Tire Manufacturing (except Retreading)	326211	39	27			946,531	35,057
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	6	4			245,955	61,489
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	2	2			46,241	23,121
Industrial	All Other Rubber Product Manufacturing	326299	14	9	(31,604)	2,108	367,934	40,882
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	4	3			48,445	16,148
Industrial	Clay Building Material and Refractories Manufacturing	327120	46	2			46,241	23,121
Industrial	Clay Refractory Manufacturing^	327124	8	4			89,686	22,421
Industrial	Flat Glass Manufacturing	327211	2	2			46,241	23,121
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	17	11	(101,956)	10,540	383,613	34,874
Industrial	Cement Manufacturing	327310	6	4			245,955	61,489
Industrial	Lime Manufacturing	327410	43	22			494,671	22,485
Industrial	Gypsum Product Manufacturing	327420	1	1			14,813	14,813
Industrial	Abrasive Product Manufacturing	327910	4	2			46,241	23,121

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Mineral Wool Manufacturing	327993	13	6	(69,750)	4,216	311,489	51,915
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	2	2			46,241	23,121
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	72	45	(1,481,176)	88,536	1,453,694	32,304
Industrial	Iron and Steel Mills^	331111	50	5			107,296	21,459
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	1	0			0	
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	5	2			46,241	23,121
Industrial	Rolled Steel Shape Manufacturing	331221	6	2			46,241	23,121
Industrial	Primary Aluminum Production^	331312	2	0			0	
Industrial	Alumina Refining and Primary Aluminum Production	331313	16	1	0	0	14,813	14,813
Industrial	Secondary Smelting and Alloying of Aluminum	331314	53	22	(267,384)	114,385	167,812	7,628
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	6	2			46,241	23,121
Industrial	Aluminum Extruded Product Manufacturing^	331316	1	0			0	
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	2	0			0	
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1	0			0	
Industrial	Primary Smelting and Refining of Copper^	331411	0	0			0	
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	2	0			0	
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	3	0	0	0	0	
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1	0			0	
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	3	1			14,813	14,813
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	2	0			0	
Industrial	Iron Foundries	331511	83	40			1,131,953	28,299
Industrial	Steel Foundries (except Investment)	331513	2	0			0	
Industrial	Aluminum Die-Casting Foundries^	331521	1	0			0	
Industrial	Aluminum Foundries (except Die-Casting)	331524	2	0			0	
Industrial	Nonferrous Forging	332112	1	1			14,813	14,813
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	1	1			14,813	14,813
Industrial	Hand and Edge Tool Manufacturing^	332212	1	1			14,813	14,813
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	1	1			14,813	14,813
Industrial	Fabricated Structural Metal Manufacturing	332312	1	1			14,813	14,813

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Metal Window and Door Manufacturing	332321	5	5			277,384	55,477
Industrial	Sheet Metal Work Manufacturing	332322	1	1			14,813	14,813
Industrial	Metal Can Manufacturing	332431	14	8	(40,000)	619	346,391	43,299
Industrial	Other Metal Container Manufacturing	332439	4	3			61,054	20,351
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	1	1			14,813	14,813
Industrial	Metal Heat Treating	332811	1	1			14,813	14,813
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	436	332	(13,959,045)	620,579	13,985,110	42,124
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	3	3			61,054	20,351
Industrial	Other Fabricated Metal Manufacturing	332990	1	1			14,813	14,813
Industrial	Small Arms Ammunition Manufacturing	332992	1	1			14,813	14,813
Industrial	Ammunition (except Small Arms) Manufacturing	332993	3	3			61,054	20,351
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	3	3			61,054	20,351
Industrial	Farm Machinery and Equipment Manufacturing	333111	8	5			277,384	55,477
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1	1			14,813	14,813
Industrial	Construction Machinery Manufacturing	333120	30	20			1,601,080	80,054
Industrial	Mining Machinery and Equipment Manufacturing	333131	2	2			46,241	23,121
Industrial	Printing Machinery and Equipment Manufacturing^	333293	1	1			14,813	14,813
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1	1			14,813	14,813
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1	1			14,813	14,813
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	1	1			14,813	14,813
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	1	1			14,813	14,813
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1	1			14,813	14,813
Industrial	Other Engine Equipment Manufacturing	333618	5	4			245,955	61,489
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1	1			14,813	14,813
Industrial	Welding and Soldering Equipment Manufacturing	333992	2	2			46,241	23,121
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1	1			14,813	14,813
Industrial	Electron Tube Manufacturing^	334411	1	1			14,813	14,813
Industrial	Bare Printed Circuit Board Manufacturing	334412	1	1			14,813	14,813
Industrial	Semiconductor and Related Device Manufacturing	334413	23	16			632,761	39,548

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	1	1			14,813	14,813
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	0	0			0	
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1	1			14,813	14,813
Industrial	Household Laundry Equipment Manufacturing	335224	13	11	(257,544)	4,950	313,649	28,514
Industrial	Other Major Household Appliance Manufacturing	335228	2	2			46,241	23,121
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	1	1			14,813	14,813
Industrial	Motor and Generator Manufacturing	335312	2	2			46,241	23,121
Industrial	Storage Battery Manufacturing	335911	1	1			14,813	14,813
Industrial	Current-Carrying Wiring Device Manufacturing	335931	1	1			14,813	14,813
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1	1			14,813	14,813
Industrial	Carbon and Graphite Product Manufacturing	335991	6	5			277,384	55,477
Industrial	Automobile Manufacturing	336111	66	33	(719,231)	35,836	1,344,851	40,753
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	5	4			245,955	61,489
Industrial	Heavy Duty Truck Manufacturing	336120	8	6			292,197	48,699
Industrial	Motor Vehicle Body Manufacturing	336211	8	6			292,197	48,699
Industrial	Truck Trailer Manufacturing	336212	1	1			14,813	14,813
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	2	2			46,241	23,121
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	1	1			14,813	14,813
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	3	2			46,241	23,121
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	2	2			46,241	23,121
Industrial	Motor Vehicle Brake System Manufacturing	336340	1	1			14,813	14,813
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	2	2			46,241	23,121
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1	1			14,813	14,813
Industrial	Motor Vehicle Metal Stamping	336370	1	1			14,813	14,813
Industrial	Other Motor Vehicle Parts Manufacturing	336390	13	9			353,251	39,250
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	2	2			46,241	23,121
Industrial	Aircraft Manufacturing	336411	125	99	(9,666,667)	53,827	10,028,341	101,296
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	8	6			292,197	48,699
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	10	6			292,197	48,699

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1	1			14,813	14,813
Industrial	Railroad Rolling Stock Manufacturing	336510	1	1			14,813	14,813
Industrial	Ship Building and Repairing	336611	92	57	(2,549,443)	107,508	2,734,131	47,967
Industrial	Boat Building	336612	123	81			6,550,838	80,875
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	2	2			46,241	23,121
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	347	260	(3,602,566)	337,764	3,649,482	14,036
Industrial	Upholstered Household Furniture Manufacturing	337121	2	2			46,241	23,121
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	14	10			384,680	38,468
Industrial	Institutional Furniture Manufacturing	337127	1	1			14,813	14,813
Industrial	Wood Office Furniture Manufacturing	337211	5	4			245,955	61,489
Industrial	Office Furniture (except Wood) Manufacturing	337214	19	12	(327,616)	6,187	367,670	30,639
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	1	1			14,813	14,813
Industrial	Blind and Shade Manufacturing	337920	1	1			14,813	14,813
Industrial	Surgical and Medical Instrument Manufacturing	339112	2	2			46,241	23,121
Industrial	Surgical Appliance and Supplies Manufacturing	339113	1	1			14,813	14,813
Industrial	Jewelry and Silverware Manufacturing	339910	1	1			14,813	14,813
Industrial	Sporting and Athletic Goods Manufacturing	339920	1	1			14,813	14,813
Industrial	Office Supplies (except Paper) Manufacturing	339940	1	1			14,813	14,813
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	2	2			46,241	23,121
Industrial	Burial Casket Manufacturing	339995	3	2			46,241	23,121
Industrial	All Other Miscellaneous Manufacturing	339999	5	4			245,955	61,489
Commercial	Grain and Field Bean Merchant Wholesalers	424510	1	1			14,813	14,813
Commercial	Petroleum Bulk Stations and Terminals	424710	7	4			245,955	61,489
Commercial	Scheduled Passenger Air Transportation	481111	2	2			46,241	23,121
Commercial	Line-Haul Railroads	482111	1	1			14,813	14,813
Energy	Pipeline Transportation of Crude Oil	486110	1	1			14,813	14,813
Energy	Pipeline Transportation of Natural Gas	486210	501	284	(521,806)	392,088	3,987,639	14,041
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1	1			14,813	14,813
Commercial	Support Activities for Rail Transportation	488210	3	2			46,241	23,121
Commercial	Marine Cargo Handling	488320	2	2			46,241	23,121
Commercial	General Warehousing and Storage	493110	180	86	(2,686,090)	513,176	2,172,913	25,266
Commercial	Other Warehousing and Storage	493190	6	2			46,241	23,121

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	1	1			14,813	14,813
Commercial	Testing Laboratories	541380	2	2			46,241	23,121
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	2	2			46,241	23,121
Commercial	All Other Support Services	561990	1	1			14,813	14,813
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	41	26	(2,234,667)	50,592	2,230,316	85,781
Waste Treatment	Solid Waste Landfill	562212	522	330			29,903,390	90,616
Waste Treatment	Solid Waste Combustors and Incinerators	562213	3	2			46,241	23,121
Waste Treatment	Remediation Services	562910	1	1			14,813	14,813
Educational Services	Colleges, Universities, and Professional Schools	611310	23	13			600,402	46,185
Commercial	Amusement and Theme Parks	713110	1	1			14,813	14,813
Commercial	Linen and Uniform Supply	812330	1	1			14,813	14,813
Commercial	Industrial Launderers	812332	3	2			46,241	23,121

Notes:

Six source categories from the assessed categories were identified that would not be affected by the change in policy: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating, Secondary Lead, Wool Fiberglass, and Portland Cement.

Out of these six categories, four area source categories are subject to a MACT standard where area sources in these categories are subject to the same HAP requirement for major sources in these categories: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating, and Portland Cement. Because there are no differences in the requirements between major and area sources for these categories, there is no impact of the MM2A policy change on these categories, and they were excluded from the table.

For Table 3-4, two columns—Projected Cost Savings and Estimated Cost of Area Source Requirements—are incomplete because for the cost categories without completed RTR modeling files, we only have the extrapolated cost or savings for facilities in year 2 and not a breakdown of those cost savings by area source requirement costs or supporting statement cost savings. We have included all of the cost information that is currently available.

The blank cells in the “Average Avoided Cost/Entity” column represent source categories for which there are zero facilities projected to obtain area source status.

NAICS 922140 (Correctional Institutions), NAICS 927110 (Space Research and Technology), NAICS 928110 (National Security) are government/public administration NAICS codes not covered by the Census. Hence, we have not included them in this table.

NAICS 999999 is an unclassified code and are not included in this table.

Sources: 2012 Economic Census; Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD.

NAICS 2012 and NAICS 2007 (<https://www.census.gov/eos/www/naics/downloadables/downloadables.html>).

Table 3-5 Year 2 Avoided Cost for Affected Sources of the Proposed MM2A Rule Under Alternative Scenario 1 (\$2014\$)

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	1	0			0	
Energy	Crude Petroleum and Natural Gas Extraction	211111	120	52	(293,598)	21,959	563,836	10,843
Energy	Natural Gas Liquid Extraction	211112	26	11			399,493	36,318
Industrial	Iron Ore Mining	212210	9	1			14,813	14,813
Industrial	Lead Ore and Zinc Ore Mining	212231	1	0			0	
Industrial	Copper Ore and Nickel Ore Mining	212234	1	0			0	
Industrial	All Other Metal Ore Mining	212299	1	0			0	
Industrial	Industrial Sand Mining	212322	3	1			14,813	14,813
Industrial	Kaolin and Ball Clay Mining	212324	3	1			14,813	14,813
Industrial	Potash, Soda, and Borate Mineral Mining	212391	6	2			46,241	23,121
Industrial	All Other Nonmetallic Mineral Mining	212399	1	0			0	
Energy	Support Activities for Oil and Gas Operations	213112	3	1			14,813	14,813
Utilities	Hydroelectric Power Generation	221111	1	0			0	
Utilities	Fossil Fuel Electric Power Generation	221112	334	60			2,414,095	40,235
Utilities	Biomass Electric Power Generation	221117	5	2			46,241	23,121
Utilities	Other Electric Power Generation	221118	1	0			0	
Utilities	Other Electric Power Generation^	221119	8	3			61,054	20,351
Utilities	Electric Power Distribution	221122	1	0			0	
Utilities	Natural Gas Distribution	221210	13	5			107,296	21,459
Utilities	Water Supply and Irrigation Systems	221310	2	0			0	
Utilities	Sewage Treatment Facilities	221320	19	8	(304)	304	61,054	7,632
Utilities	Steam and Air-Conditioning Supply	221330	22	9			353,251	39,250
Industrial	Other Animal Food Manufacturing	311119	1	0			0	
Industrial	Wet Corn Milling	311221	16	0			0	
Industrial	Soybean Processing^	311222	16	0			0	
Industrial	Other Oilseed Processing^	311223	5	0			0	
Industrial	Soybean and Other Oilseed Processing	311224	116	2	(78,876)	4,216	74,660	37,330
Industrial	Fats and Oils Refining and Blending	311225	2	0			0	
Industrial	Beet Sugar Manufacturing	311313	11	0			0	
Industrial	Cane Sugar Manufacturing	311314	3	0			0	
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	2	0			0	
Industrial	Fruit and Vegetable Canning	311421	1	0			0	
Industrial	Specialty Canning	311422	2	0			0	
Industrial	Cheese Manufacturing	311513	2	0			0	

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	3	0			0	
Industrial	Rendering and Meat Byproduct Processing	311613	1	0			0	
Industrial	Commercial Bakeries	311812	2	0			0	
Industrial	Other Snack Food Manufacturing	311919	1	0			0	
Industrial	Coffee and Tea Manufacturing	311920	1	0			0	
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1	0			0	
Industrial	Spice and Extract Manufacturing	311942	4	0			0	
Industrial	All Other Miscellaneous Food Manufacturing	311999	6	0	0	0	0	
Industrial	Breweries	312120	3	1			14,813	14,813
Industrial	Distilleries	312140	1	0			0	
Industrial	Tobacco Manufacturing	312230	1	0			0	
Industrial	Yarn Spinning Mills^	313111	1	0			0	
Industrial	Thread Mills^	313113	1	0			0	
Industrial	Broadwoven Fabric Mills	313210	2	0			0	
Industrial	Narrow Fabric Mills^	313221	1	0			0	
Industrial	Textile and Fabric Finishing Mills	313310	1	0			0	
Industrial	Broadwoven Fabric Finishing Mills^	313311	3	1			14,813	14,813
Industrial	Fabric Coating Mills	313320	50	20	(261,986)	35,836	287,205	14,360
Industrial	Tire Cord and Tire Fabric Mills^	314992	1	0			0	
Industrial	Leather and Hide Tanning and Finishing	316110	6	5	(9,795)	6,324	49,713	9,943
Industrial	Sawmills	321113	61	34			1,367,959	40,234
Industrial	Wood Preservation	321114	3	2			46,241	23,121
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	3	2			46,241	23,121
Industrial	Softwood Veneer and Plywood Manufacturing	321212	29	17			692,885	40,758
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	6	4			245,955	61,489
Industrial	Reconstituted Wood Product Manufacturing	321219	284	161	(851,724)	54,808	5,088,225	31,604
Industrial	Wood Window and Door Manufacturing	321911	4	2			46,241	23,121
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	4	2			46,241	23,121
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	3	2			46,241	23,121
Industrial	Pulp Mills	322110	18	0			0	
Industrial	Paper (except Newsprint) Mills	322121	281	0	0	0	0	
Industrial	Newsprint Mills	322122	7	0			0	
Industrial	Paperboard Mills	322130	36	0			0	
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	213	99			2,144,376	21,660

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	17	0			0	
Industrial	Coated and Laminated Paper Manufacturing^	322222	12	0			0	
Industrial	Sanitary Paper Product Manufacturing	322291	2	0			0	
Industrial	All Other Converted Paper Product Manufacturing	322299	1	0			0	
Industrial	Commercial Lithographic Printing^	323110	1	1			14,813	14,813
Industrial	Commercial Printing (except Screen and Books)	323111	188	95	(1,485,426)	183,396	1,640,468	17,268
Industrial	Books Printing	323117	3	2			46,241	23,121
Industrial	Petroleum Refineries	324110	424	124	(19,410,125)	52,700	21,014,416	169,471
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	3	0			0	
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	4	0			0	
Industrial	Petrochemical Manufacturing	325110	597	215	(442,943)	170,971	1,339,064	6,228
Industrial	Industrial Gas Manufacturing	325120	4	1			14,813	14,813
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1	0			0	
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	3	1			14,813	14,813
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	2	0			0	
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	10	2			46,241	23,121
Industrial	Alkalies and Chlorine Manufacturing^	325181	4	1			17,569	17,569
Industrial	Carbon Black Manufacturing^	325182	21	8			90,342	11,293
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	93	31			281,556	9,082
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	1	0			0	
Industrial	Ethyl Alcohol Manufacturing	325193	7	2			46,241	23,121
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	2	0			0	
Industrial	All Other Basic Organic Chemical Manufacturing	325199	77	20	(393,103)	6,324	1,063,049	53,152
Industrial	Plastics Material and Resin Manufacturing	325211	833	231	(11,120,441)	140,112	34,073,655	147,505
Industrial	Synthetic Rubber Manufacturing	325212	24	3	(1,767)	3,947	12,634	4,211
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	6	2	0	0	46,241	23,121
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1	0			0	
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	8	2			234,733	117,367
Industrial	Nitrogenous Fertilizer Manufacturing	325311	16	4			245,955	61,489
Industrial	Phosphatic Fertilizer Manufacturing	325312	30	2	0	0	46,241	23,121
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	22	2	(65,439)	1,973	78,278	39,139
Industrial	Medicinal and Botanical Manufacturing	325411	4	1			14,813	14,813
Industrial	Pharmaceutical Preparation Manufacturing	325412	36	7	(801,899)	9,867	838,273	119,753

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1	0			0	
Industrial	Paint and Coating Manufacturing	325510	51	23	(2,749,089)	41,442	2,753,889	119,734
Industrial	Adhesive Manufacturing	325520	4	1			14,813	14,813
Industrial	Surface Active Agent Manufacturing	325613	2	0			0	
Industrial	Toilet Preparation Manufacturing	325620	2	0			0	
Industrial	Explosives Manufacturing	325920	2	0			0	
Industrial	Custom Compounding of Purchased Resins	325991	5	2			46,241	23,121
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	4	1			14,813	14,813
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	10	2			46,241	23,121
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	5	2			46,241	23,121
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	16	7			307,010	43,859
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	12	0			0	
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	1	0			0	
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	7	3			61,054	20,351
Industrial	Polystyrene Foam Product Manufacturing	326140	1	0			0	
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	19	17	(46,810)	5,976	57,848	3,403
Industrial	Plastics Plumbing Fixture Manufacturing	326191	2	0			0	
Industrial	All Other Plastics Product Manufacturing	326199	148	68	(2,218,563)	120,156	2,497,899	36,734
Industrial	Tire Manufacturing (except Retreading)	326211	39	18			700,232	38,902
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	6	2			46,241	23,121
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	2	0			0	
Industrial	All Other Rubber Product Manufacturing	326299	14	5	0	0	107,296	21,459
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	4	1			29,714	29,714
Industrial	Clay Building Material and Refractories Manufacturing	327120	46	0			0	
Industrial	Clay Refractory Manufacturing^	327124	8	3			79,238	26,413
Industrial	Flat Glass Manufacturing	327211	2	0			0	
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	17	7	(81,565)	8,432	134,187	19,170
Industrial	Cement Manufacturing	327310	6	2			46,241	23,121
Industrial	Lime Manufacturing	327410	43	18			411,005	22,834

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Gypsum Product Manufacturing	327420	1	0			0	
Industrial	Abrasive Product Manufacturing	327910	4	1			14,813	14,813
Industrial	Mineral Wool Manufacturing	327993	13	4	(69,750)	4,216	111,775	27,944
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	2	0			0	
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	72	43	(1,410,644)	84,320	1,387,378	32,265
Industrial	Iron and Steel Mills^	331111	50	5			107,296	21,459
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	1	0			0	
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	5	2			46,241	23,121
Industrial	Rolled Steel Shape Manufacturing	331221	6	2			46,241	23,121
Industrial	Primary Aluminum Production^	331312	2	0			0	
Industrial	Alumina Refining and Primary Aluminum Production	331313	16	1	0	0	14,813	14,813
Industrial	Secondary Smelting and Alloying of Aluminum	331314	53	20	(241,918)	103,491	153,240	7,662
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	6	2			46,241	23,121
Industrial	Aluminum Extruded Product Manufacturing^	331316	1	0			0	
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	2	0			0	
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1	0			0	
Industrial	Primary Smelting and Refining of Copper^	331411	0	0			0	
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	2	0			0	
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	3	0	0	0	0	
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1	0			0	
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	3	1			14,813	14,813
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	2	0			0	
Industrial	Iron Foundries	331511	83	38			1,088,007	28,632
Industrial	Steel Foundries (except Investment)	331513	2	0			0	
Industrial	Aluminum Die-Casting Foundries^	331521	1	0			0	
Industrial	Aluminum Foundries (except Die-Casting)	331524	2	0			0	
Industrial	Nonferrous Forging	332112	1	1			14,813	14,813
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	1	1			14,813	14,813
Industrial	Hand and Edge Tool Manufacturing^	332212	1	1			14,813	14,813

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	1	1			14,813	14,813
Industrial	Fabricated Structural Metal Manufacturing	332312	1	1			14,813	14,813
Industrial	Metal Window and Door Manufacturing	332321	5	4			245,955	61,489
Industrial	Sheet Metal Work Manufacturing	332322	1	1			14,813	14,813
Industrial	Metal Can Manufacturing	332431	14	7	(40,000)	619	331,578	47,368
Industrial	Other Metal Container Manufacturing	332439	4	2			46,241	23,121
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	1	1			14,813	14,813
Industrial	Metal Heat Treating	332811	1	1			14,813	14,813
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	436	251	(10,581,946)	469,306	10,481,900	41,761
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	3	2			46,241	23,121
Industrial	Other Fabricated Metal Manufacturing	332990	1	1			14,813	14,813
Industrial	Small Arms Ammunition Manufacturing	332992	1	1			14,813	14,813
Industrial	Ammunition (except Small Arms) Manufacturing	332993	3	2			46,241	23,121
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	3	2			46,241	23,121
Industrial	Farm Machinery and Equipment Manufacturing	333111	8	3			61,054	20,351
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1	0			0	
Industrial	Construction Machinery Manufacturing	333120	30	15			1,156,489	77,099
Industrial	Mining Machinery and Equipment Manufacturing	333131	2	0			0	
Industrial	Printing Machinery and Equipment Manufacturing^	333293	1	0			0	
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1	0			0	
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1	0			0	
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	1	0			0	
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	1	0			0	
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1	0			0	
Industrial	Other Engine Equipment Manufacturing	333618	5	2			46,241	23,121
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1	0			0	
Industrial	Welding and Soldering Equipment Manufacturing	333992	2	0			0	

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1	0			0	
Industrial	Electron Tube Manufacturing^	334411	1	0			0	
Industrial	Bare Printed Circuit Board Manufacturing	334412	1	0			0	
Industrial	Semiconductor and Related Device Manufacturing	334413	23	13			512,008	39,385
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	1	0			0	
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	0	0			0	
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1	1			14,813	14,813
Industrial	Household Laundry Equipment Manufacturing	335224	13	11	(257,544)	4,950	313,649	28,514
Industrial	Other Major Household Appliance Manufacturing	335228	2	2			46,241	23,121
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	1	1			14,813	14,813
Industrial	Motor and Generator Manufacturing	335312	2	2			46,241	23,121
Industrial	Storage Battery Manufacturing	335911	1	1			14,813	14,813
Industrial	Current-Carrying Wiring Device Manufacturing	335931	1	1			14,813	14,813
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1	1			14,813	14,813
Industrial	Carbon and Graphite Product Manufacturing	335991	6	5			277,384	55,477
Industrial	Automobile Manufacturing	336111	66	18	(211,538)	10,540	801,401	44,522
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	5	4			245,955	61,489
Industrial	Heavy Duty Truck Manufacturing	336120	8	5			277,384	55,477
Industrial	Motor Vehicle Body Manufacturing	336211	8	5			277,384	55,477
Industrial	Truck Trailer Manufacturing	336212	1	1			14,813	14,813
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	2	2			46,241	23,121
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	1	1			14,813	14,813
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	3	2			46,241	23,121
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	2	2			46,241	23,121
Industrial	Motor Vehicle Brake System Manufacturing	336340	1	1			14,813	14,813
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	2	2			46,241	23,121
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1	1			14,813	14,813
Industrial	Motor Vehicle Metal Stamping	336370	1	1			14,813	14,813

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Other Motor Vehicle Parts Manufacturing	336390	13	7			307,010	43,859
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	2	2			46,241	23,121
Industrial	Aircraft Manufacturing	336411	125	84	(8,222,222)	45,784	8,545,698	101,735
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	8	5			277,384	55,477
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	10	6			292,197	48,699
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1	1			14,813	14,813
Industrial	Railroad Rolling Stock Manufacturing	336510	1	1			14,813	14,813
Industrial	Ship Building and Repairing	336611	92	48	(2,149,530)	90,644	2,336,270	48,672
Industrial	Boat Building	336612	123	64			5,375,427	83,991
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	2	2			46,241	23,121
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	347	238	(3,299,951)	309,392	3,343,810	14,050
Industrial	Upholstered Household Furniture Manufacturing	337121	2	2			46,241	23,121
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	14	9			353,251	39,250
Industrial	Institutional Furniture Manufacturing	337127	1	1			14,813	14,813
Industrial	Wood Office Furniture Manufacturing	337211	5	4			245,955	61,489
Industrial	Office Furniture (except Wood) Manufacturing	337214	19	8	(196,569)	3,712	239,099	29,887
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	1	1			14,813	14,813
Industrial	Blind and Shade Manufacturing	337920	1	1			14,813	14,813
Industrial	Surgical and Medical Instrument Manufacturing	339112	2	0			0	
Industrial	Surgical Appliance and Supplies Manufacturing	339113	1	0			0	
Industrial	Jewelry and Silverware Manufacturing	339910	1	0			0	
Industrial	Sporting and Athletic Goods Manufacturing	339920	1	0			0	
Industrial	Office Supplies (except Paper) Manufacturing	339940	1	0			0	
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	2	0			0	
Industrial	Burial Casket Manufacturing	339995	3	1			14,813	14,813
Industrial	All Other Miscellaneous Manufacturing	339999	5	2			46,241	23,121
Commercial	Grain and Field Bean Merchant Wholesalers	424510	1	0			0	
Commercial	Petroleum Bulk Stations and Terminals	424710	7	3			61,054	20,351
Commercial	Scheduled Passenger Air Transportation	481111	2	0			0	
Commercial	Line-Haul Railroads	482111	1	0			0	
Energy	Pipeline Transportation of Crude Oil	486110	1	0			0	
Energy	Pipeline Transportation of Natural Gas	486210	501	229	(421,167)	316,200	3,240,377	14,150

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1	0			0	
Commercial	Support Activities for Rail Transportation	488210	3	1			14,813	14,813
Commercial	Marine Cargo Handling	488320	2	0			0	
Commercial	General Warehousing and Storage	493110	180	75	(2,342,520)	447,537	1,894,983	25,266
Commercial	Other Warehousing and Storage	493190	6	2			46,241	23,121
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	1	0			0	
Commercial	Testing Laboratories	541380	2	0			0	
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	2	0			0	
Commercial	All Other Support Services	561990	1	0			0	
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	41	21	(1,769,111)	40,052	1,775,301	84,538
Waste Treatment	Solid Waste Landfill	562212	522	262			23,724,758	90,553
Waste Treatment	Solid Waste Combustors and Incinerators	562213	3	2			46,241	23,121
Waste Treatment	Remediation Services	562910	1	1			14,813	14,813
Educational Services	Colleges, Universities, and Professional Schools	611310	23	9			353,251	39,250
Commercial	Amusement and Theme Parks	713110	1	0			0	
Commercial	Linen and Uniform Supply	812330	1	0			0	
Commercial	Industrial Launderers	812332	3	1			14,813	14,813

Notes:

Six source categories from the assessed categories were identified that would not be affected by the change in policy: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating, Secondary Lead, Wool Fiberglass, and Portland Cement.

Out of these six categories, four area source categories are subject to a MACT standard where area sources in these categories are subject to the same HAP requirement for major sources in these categories: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating and Portland Cement. Because there are no differences in the requirements between major and area sources for these categories, there is no impact of the MM2A policy change on these categories and they were excluded from the table.

For Table 3-5, two columns—Projected Costs Savings and Estimated Cost of Area Source Requirements—are incomplete because for the cost categories without completed RTR modeling files, we only have the extrapolated cost or savings for facilities in year 2 and not a breakdown of those cost savings by area source requirement costs or supporting statement cost savings. We have included all of the cost information that is currently available.

The blank cells in the “Average Avoided Cost/Entity” column represent source categories for which there are zero facilities projected to obtain area source status.

NAICS 922140 (Correctional Institutions), NAICS 927110 (Space Research and Technology), NAICS 928110 (National Security) are government/public administration NAICS codes not covered by the Census. Hence, we have not included them in this table.

NAICS 999999 is an unclassified code and therefore, we have not included it in this table.

Sources: 2012 Economic Census; Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD.

NAICS 2012 and NAICS 2007 (<https://www.census.gov/eos/www/naics/downloadables/downloadables.html>).

Table 3-6 Year 2 Avoided Cost for Affected Sources of the Proposed MM2A Rule Under Alternative Scenario 2 (2014\$)

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	1	1			14,813	14,813
Energy	Crude Petroleum and Natural Gas Extraction	211111	120	72	(408,484)	30,551	716,370	9,950
Energy	Natural Gas Liquid Extraction	211112	26	17			676,270	39,781
Industrial	Iron Ore Mining	212210	9	2			46,241	23,121
Industrial	Lead Ore and Zinc Ore Mining	212231	1	1			14,813	14,813
Industrial	Copper Ore and Nickel Ore Mining	212234	1	1			14,813	14,813
Industrial	All Other Metal Ore Mining	212299	1	1			14,813	14,813
Industrial	Industrial Sand Mining	212322	3	2			46,241	23,121
Industrial	Kaolin and Ball Clay Mining	212324	3	2			46,241	23,121
Industrial	Potash, Soda, and Borate Mineral Mining	212391	6	4			245,955	61,489
Industrial	All Other Nonmetallic Mineral Mining	212399	1	1			14,813	14,813
Energy	Support Activities for Oil and Gas Operations	213112	3	2			46,241	23,121
Utilities	Hydroelectric Power Generation	221111	1	1			14,813	14,813
Utilities	Fossil Fuel Electric Power Generation	221112	334	82			3,196,465	38,981
Utilities	Biomass Electric Power Generation	221117	5	4			245,955	61,489
Utilities	Other Electric Power Generation	221118	1	1			14,813	14,813
Utilities	Other Electric Power Generation^	221119	8	5			277,384	55,477
Utilities	Electric Power Distribution	221122	1	1			14,813	14,813
Utilities	Natural Gas Distribution	221210	13	7			307,010	43,859
Utilities	Water Supply and Irrigation Systems	221310	2	2			46,241	23,121
Utilities	Sewage Treatment Facilities	221320	19	11	(425)	425	245,955	22,360
Utilities	Steam and Air-Conditioning Supply	221330	22	13			430,314	33,101
Industrial	Other Animal Food Manufacturing	311119	1	0			0	
Industrial	Wet Corn Milling	311221	16	0			0	
Industrial	Soybean Processing^	311222	16	0			0	
Industrial	Other Oilseed Processing^	311223	5	0			0	
Industrial	Soybean and Other Oilseed Processing	311224	116	2	(78,876)	4,216	74,660	37,330
Industrial	Fats and Oils Refining and Blending	311225	2	0			0	
Industrial	Beet Sugar Manufacturing	311313	11	0			0	
Industrial	Cane Sugar Manufacturing	311314	3	0			0	
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	2	0			0	
Industrial	Fruit and Vegetable Canning	311421	1	0			0	
Industrial	Specialty Canning	311422	2	0			0	
Industrial	Cheese Manufacturing	311513	2	0			0	
Industrial	Dry, Condensed, and Evaporated Dairy Product	311514	3	0			0	

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Rendering and Meat Byproduct Processing	311613	1	0			0	
Industrial	Commercial Bakeries	311812	2	0			0	
Industrial	Other Snack Food Manufacturing	311919	1	0			0	
Industrial	Coffee and Tea Manufacturing	311920	1	0			0	
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1	0			0	
Industrial	Spice and Extract Manufacturing	311942	4	0			0	
Industrial	All Other Miscellaneous Food Manufacturing	311999	6	0	0	0	0	
Industrial	Breweries	312120	3	2			46,241	23,121
Industrial	Distilleries	312140	1	1			14,813	14,813
Industrial	Tobacco Manufacturing	312230	1	1			14,813	14,813
Industrial	Yarn Spinning Mills^	313111	1	1			14,813	14,813
Industrial	Thread Mills^	313113	1	1			14,813	14,813
Industrial	Broadwoven Fabric Mills	313210	2	2			46,241	23,121
Industrial	Narrow Fabric Mills^	313221	1	1			14,813	14,813
Industrial	Textile and Fabric Finishing Mills	313310	1	1			14,813	14,813
Industrial	Broadwoven Fabric Finishing Mills^	313311	3	2			46,241	23,121
Industrial	Fabric Coating Mills	313320	50	34	(446,918)	61,132	646,554	19,016
Industrial	Tire Cord and Tire Fabric Mills^	314992	1	1			14,813	14,813
Industrial	Leather and Hide Tanning and Finishing	316110	6	5	(9,795)	6,324	49,713	9,943
Industrial	Sawmills	321113	61	45			1,767,451	39,277
Industrial	Wood Preservation	321114	3	2			46,241	23,121
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	3	2			46,241	23,121
Industrial	Softwood Veneer and Plywood Manufacturing	321212	29	21			768,752	36,607
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	6	4			245,955	61,489
Industrial	Reconstituted Wood Product Manufacturing	321219	284	211	(1,113,793)	71,672	6,723,719	31,866
Industrial	Wood Window and Door Manufacturing	321911	4	2			46,241	23,121
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	4	2			46,241	23,121
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	3	2			46,241	23,121
Industrial	Pulp Mills	322110	18	0			0	
Industrial	Paper (except Newsprint) Mills	322121	281	1	(111,315)	2,108	109,207	109,207
Industrial	Newsprint Mills	322122	7	0			0	
Industrial	Paperboard Mills	322130	36	0			0	
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	213	157			3,324,011	21,172
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	17	0			0	

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Coated and Laminated Paper Manufacturing^	322222	12	0			0	
Industrial	Sanitary Paper Product Manufacturing	322291	2	0			0	
Industrial	All Other Converted Paper Product Manufacturing	322299	1	0			0	
Industrial	Commercial Lithographic Printing^	323110	1	1			14,813	14,813
Industrial	Commercial Printing (except Screen and Books)	323111	188	124	(1,963,494)	242,420	2,074,325	16,728
Industrial	Books Printing	323117	3	2			46,241	23,121
Industrial	Petroleum Refineries	324110	424	185	(30,329,425)	84,320	32,830,815	177,464
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	3	1			14,813	14,813
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	4	1			14,813	14,813
Industrial	Petrochemical Manufacturing	325110	597	283	(503,933)	223,402	1,800,729	6,363
Industrial	Industrial Gas Manufacturing	325120	4	1			14,813	14,813
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1	0			0	
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	3	1			14,813	14,813
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	2	0			0	
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	10	3			61,054	20,351
Industrial	Alkalies and Chlorine Manufacturing^	325181	4	1			18,684	18,684
Industrial	Carbon Black Manufacturing^	325182	21	9			108,177	12,020
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	93	42			416,973	9,928
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	1	0			0	
Industrial	Ethyl Alcohol Manufacturing	325193	7	3			61,054	20,351
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	2	0			0	
Industrial	All Other Basic Organic Chemical Manufacturing	325199	77	32	(655,172)	10,540	1,705,582	53,299
Industrial	Plastics Material and Resin Manufacturing	325211	833	412	(20,657,770)	262,464	60,811,082	147,600
Industrial	Synthetic Rubber Manufacturing	325212	24	4	(2,651)	5,920	11,544	2,886
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	6	2	0	0	46,241	23,121
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1	0			0	
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	8	3			401,098	133,699
Industrial	Nitrogenous Fertilizer Manufacturing	325311	16	7			307,010	43,859
Industrial	Phosphatic Fertilizer Manufacturing	325312	30	3	0	0	61,054	20,351
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	22	6	(327,193)	9,867	332,139	55,357
Industrial	Medicinal and Botanical Manufacturing	325411	4	1			14,813	14,813
Industrial	Pharmaceutical Preparation Manufacturing	325412	36	15	(1,924,556)	23,681	1,961,930	130,795
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1	0			0	

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Paint and Coating Manufacturing	325510	51	34	(4,189,088)	63,149	4,172,180	122,711
Industrial	Adhesive Manufacturing	325520	4	1			14,813	14,813
Industrial	Surface Active Agent Manufacturing	325613	2	0			0	
Industrial	Toilet Preparation Manufacturing	325620	2	0			0	
Industrial	Explosives Manufacturing	325920	2	0			0	
Industrial	Custom Compounding of Purchased Resins	325991	5	2			46,241	23,121
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	4	1			14,813	14,813
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	10	3			61,054	20,351
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	5	4			245,955	61,489
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	16	10			368,064	36,806
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	12	1			14,813	14,813
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	1	1			14,813	14,813
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	7	5			260,768	52,154
Industrial	Polystyrene Foam Product Manufacturing	326140	1	1			14,813	14,813
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	19	19	(46,810)	5,976	104,090	5,478
Industrial	Plastics Plumbing Fixture Manufacturing	326191	2	2			46,241	23,121
Industrial	All Other Plastics Product Manufacturing	326199	148	101	(3,269,461)	177,072	3,785,274	37,478
Industrial	Tire Manufacturing (except Retreading)	326211	39	27			941,654	34,876
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	6	4			245,955	61,489
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	2	2			46,241	23,121
Industrial	All Other Rubber Product Manufacturing	326299	14	8	0	0	338,438	42,305
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	4	3			48,445	16,148
Industrial	Clay Building Material and Refractories Manufacturing	327120	46	2			46,241	23,121
Industrial	Clay Refractory Manufacturing^	327124	8	4			89,686	22,421
Industrial	Flat Glass Manufacturing	327211	2	2			46,241	23,121
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	17	11	(101,956)	10,540	383,613	34,874
Industrial	Cement Manufacturing	327310	6	4			245,955	61,489
Industrial	Lime Manufacturing	327410	43	22			494,671	22,485
Industrial	Gypsum Product Manufacturing	327420	1	1			14,813	14,813

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Abrasive Product Manufacturing	327910	4	2			46,241	23,121
Industrial	Mineral Wool Manufacturing	327993	13	6	(69,750)	4,216	311,489	51,915
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	2	2			46,241	23,121
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	72	50	(1,586,975)	94,860	1,769,498	35,390
Industrial	Iron and Steel Mills^	331111	50	6			292,197	48,699
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	1	1			14,813	14,813
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	5	4			245,955	61,489
Industrial	Rolled Steel Shape Manufacturing	331221	6	4			245,955	61,489
Industrial	Primary Aluminum Production^	331312	2	2			46,241	23,121
Industrial	Alumina Refining and Primary Aluminum Production	331313	16	2	0	0	46,241	23,121
Industrial	Secondary Smelting and Alloying of Aluminum	331314	53	27	(318,314)	136,172	228,383	8,459
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	6	4			245,955	61,489
Industrial	Aluminum Extruded Product Manufacturing^	331316	1	1			14,813	14,813
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	2	2			46,241	23,121
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1	1			14,813	14,813
Industrial	Primary Smelting and Refining of Copper^	331411	0	0			0	
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	2	1			14,813	14,813
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	3	2	0	0	46,241	23,121
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1	1			14,813	14,813
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	3	2			46,241	23,121
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	2	2			46,241	23,121
Industrial	Iron Foundries	331511	83	46			1,248,073	27,132
Industrial	Steel Foundries (except Investment)	331513	2	2			46,241	23,121
Industrial	Aluminum Die-Casting Foundries^	331521	1	1			14,813	14,813
Industrial	Aluminum Foundries (except Die-Casting)	331524	2	2			46,241	23,121
Industrial	Nonferrous Forging	332112	1	1			14,813	14,813
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	1	1			14,813	14,813
Industrial	Hand and Edge Tool Manufacturing^	332212	1	1			14,813	14,813
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	1	1			14,813	14,813
Industrial	Fabricated Structural Metal Manufacturing	332312	1	1			14,813	14,813

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Metal Window and Door Manufacturing	332321	5	6			292,197	48,699
Industrial	Sheet Metal Work Manufacturing	332322	1	1			14,813	14,813
Industrial	Metal Can Manufacturing	332431	14	11	(120,000)	1,856	456,582	41,507
Industrial	Other Metal Container Manufacturing	332439	4	3			61,054	20,351
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	1	1			14,813	14,813
Industrial	Metal Heat Treating	332811	1	1			14,813	14,813
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	436	371	(15,574,742)	690,257	15,545,941	41,903
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	3	3			61,054	20,351
Industrial	Other Fabricated Metal Manufacturing	332990	1	1			14,813	14,813
Industrial	Small Arms Ammunition Manufacturing	332992	1	1			14,813	14,813
Industrial	Ammunition (except Small Arms) Manufacturing	332993	3	3			61,054	20,351
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	3	3			61,054	20,351
Industrial	Farm Machinery and Equipment Manufacturing	333111	8	5			277,384	55,477
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1	1			14,813	14,813
Industrial	Construction Machinery Manufacturing	333120	30	23			1,754,999	76,304
Industrial	Mining Machinery and Equipment Manufacturing	333131	2	2			46,241	23,121
Industrial	Printing Machinery and Equipment Manufacturing^	333293	1	1			14,813	14,813
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1	1			14,813	14,813
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1	1			14,813	14,813
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	1	1			14,813	14,813
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	1	1			14,813	14,813
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1	1			14,813	14,813
Industrial	Other Engine Equipment Manufacturing	333618	5	4			245,955	61,489
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1	1			14,813	14,813
Industrial	Welding and Soldering Equipment Manufacturing	333992	2	2			46,241	23,121
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1	1			14,813	14,813
Industrial	Electron Tube Manufacturing^	334411	1	1			14,813	14,813
Industrial	Bare Printed Circuit Board Manufacturing	334412	1	1			14,813	14,813

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Semiconductor and Related Device Manufacturing	334413	23	18			706,710	39,262
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	1	1			14,813	14,813
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	0	0			0	
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1	1			14,813	14,813
Industrial	Household Laundry Equipment Manufacturing	335224	13	11	(257,544)	4,950	313,649	28,514
Industrial	Other Major Household Appliance Manufacturing	335228	2	2			46,241	23,121
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	1	1			14,813	14,813
Industrial	Motor and Generator Manufacturing	335312	2	2			46,241	23,121
Industrial	Storage Battery Manufacturing	335911	1	1			14,813	14,813
Industrial	Current-Carrying Wiring Device Manufacturing	335931	1	1			14,813	14,813
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1	1			14,813	14,813
Industrial	Carbon and Graphite Product Manufacturing	335991	6	5			277,384	55,477
Industrial	Automobile Manufacturing	336111	66	37	(803,846)	40,052	1,471,492	39,770
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	5	5			277,384	55,477
Industrial	Heavy Duty Truck Manufacturing	336120	8	6			292,197	48,699
Industrial	Motor Vehicle Body Manufacturing	336211	8	6			292,197	48,699
Industrial	Truck Trailer Manufacturing	336212	1	1			14,813	14,813
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	2	2			46,241	23,121
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	1	1			14,813	14,813
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	3	3			61,054	20,351
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	2	2			46,241	23,121
Industrial	Motor Vehicle Brake System Manufacturing	336340	1	1			14,813	14,813
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	2	2			46,241	23,121
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1	1			14,813	14,813
Industrial	Motor Vehicle Metal Stamping	336370	1	1			14,813	14,813
Industrial	Other Motor Vehicle Parts Manufacturing	336390	13	9			353,251	39,250
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	2	2			46,241	23,121
Industrial	Aircraft Manufacturing	336411	125	107	(10,222,222)	56,921	10,811,945	101,046
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	8	6			292,197	48,699
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	10	7			307,010	43,859

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1	1			14,813	14,813
Industrial	Railroad Rolling Stock Manufacturing	336510	1	1			14,813	14,813
Industrial	Ship Building and Repairing	336611	92	74	(3,399,257)	143,344	3,548,110	47,947
Industrial	Boat Building	336612	123	94			7,304,463	77,707
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	2	2			46,241	23,121
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	347	289	(3,991,643)	374,242	4,201,795	14,539
Industrial	Upholstered Household Furniture Manufacturing	337121	2	2			46,241	23,121
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	14	12			584,394	48,699
Industrial	Institutional Furniture Manufacturing	337127	1	1			14,813	14,813
Industrial	Wood Office Furniture Manufacturing	337211	5	6			292,197	48,699
Industrial	Office Furniture (except Wood) Manufacturing	337214	19	17	(458,662)	8,662	511,055	30,062
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	1	1			14,813	14,813
Industrial	Blind and Shade Manufacturing	337920	1	1			14,813	14,813
Industrial	Surgical and Medical Instrument Manufacturing	339112	2	2			46,241	23,121
Industrial	Surgical Appliance and Supplies Manufacturing	339113	1	1			14,813	14,813
Industrial	Jewelry and Silverware Manufacturing	339910	1	1			14,813	14,813
Industrial	Sporting and Athletic Goods Manufacturing	339920	1	1			14,813	14,813
Industrial	Office Supplies (except Paper) Manufacturing	339940	1	1			14,813	14,813
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	2	2			46,241	23,121
Industrial	Burial Casket Manufacturing	339995	3	2			46,241	23,121
Industrial	All Other Miscellaneous Manufacturing	339999	5	4			245,955	61,489
Commercial	Grain and Field Bean Merchant Wholesalers	424510	1	1			14,813	14,813
Commercial	Petroleum Bulk Stations and Terminals	424710	7	4			245,955	61,489
Commercial	Scheduled Passenger Air Transportation	481111	2	2			46,241	23,121
Commercial	Line-Haul Railroads	482111	1	1			14,813	14,813
Energy	Pipeline Transportation of Crude Oil	486110	1	1			14,813	14,813
Energy	Pipeline Transportation of Natural Gas	486210	501	326	(600,081)	451,112	4,467,437	13,704
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1	1			14,813	14,813
Commercial	Support Activities for Rail Transportation	488210	3	2			46,241	23,121
Commercial	Marine Cargo Handling	488320	2	2			46,241	23,121
Commercial	General Warehousing and Storage	493110	180	108	(3,310,762)	632,519	2,724,484	25,227
Commercial	Other Warehousing and Storage	493190	6	4			245,955	61,489

Sector	Source Category	NAICS	Facilities		\$/Year		Cost (\$)	
			Category Subject to MACT	Projected to Obtain Area Source Status	Projected Costs (Savings)	Estimated Cost of Area Source Requirements	Avoided Costs Year 2	Average Avoided Cost/Entity
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	1	1			14,813	14,813
Commercial	Testing Laboratories	541380	2	2			46,241	23,121
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	2	2			46,241	23,121
Commercial	All Other Support Services	561990	1	1			14,813	14,813
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	41	32	(2,700,222)	61,132	2,700,144	84,380
Waste Treatment	Solid Waste Landfill	562212	522	399			36,113,451	90,510
Waste Treatment	Solid Waste Combustors and Incinerators	562213	3	3			61,054	20,351
Waste Treatment	Remediation Services	562910	1	1			14,813	14,813
Educational Services	Colleges, Universities, and Professional Schools	611310	23	15			646,644	43,110
Commercial	Amusement and Theme Parks	713110	1	1			14,813	14,813
Commercial	Linen and Uniform Supply	812330	1	1			14,813	14,813
Commercial	Industrial Launderers	812332	3	2			46,241	23,121

Notes:

Six source categories from the assessed categories were identified that would not be affected by the change in policy: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating, Secondary Lead, Wool Fiberglass, and Portland Cement.

Out of these six categories, four area source categories are subject to a MACT standard where area sources in these categories are subject to the same HAP requirement for major sources in these categories: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating and Portland Cement. Because there are no differences in the requirements between major and area sources for these categories, there is no impact of the MM2A policy change on these categories and they were excluded from the table.

For Table 3-6, two columns—Projected Costs Savings based on supporting statement costs and the Estimated Cost of Area Source Requirements—are incomplete because for the cost categories without RTR modeling files, we only have the extrapolated cost or savings for facilities in year 2 and not a breakdown of those cost savings by area source requirement costs or supporting statement cost savings. We have included all of the cost information that is currently available.

The blank cells in the “Average Avoided Cost/Entity” column represent source categories for which there are zero facilities projected to obtain area source status.

For not directly assessed Source Category “Pulp & Paper (non-combust) MACT” (NAICS 322121), one facility is extrapolated to obtain area source status. However, in the estimation of Extrapolated Costs (Savings), “No facilities are expected to be area sources.” We assume the same when calculating the number of facilities expected to obtain area source status for this not directly assessed category.

NAICS 922140 (Correctional Institutions), NAICS 927110 (Space Research and Technology), NAICS 928110 (National Security) are government/public administration NAICS codes not covered by the Census. Hence, we have not included them in this table.

NAICS 999999 is an unclassified code and therefore, we have not included it in this table.

Sources: 2012 Economic Census; Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD.

NAICS 2012 and NAICS 2007 (<https://www.census.gov/eos/www/naics/downloadables/downloadables.html>).

3.3 Present Value and Equivalent Annualized Value Costs

To comply with EOs 12866 and 13771, the EPA also estimated the PV of the illustrative cost savings for each scenario. The PV is the value of a stream of impacts over time, discounted to the current day. For this analysis, there is the presumption of an infinite time horizon, given that there is no review period for this action in the Clean Air Act unlike that for most rulemakings subject to that Act. Therefore, the estimate of the PV for each scenario is the annual cost savings divided by the relevant discount rate expressed as a fraction (*e.g.*, 7% discount rate is expressed as 0.07). The PV of the cost savings for the primary alternative scenario is \$2.34 billion (in 2014 dollars) at a discount rate of 7%, which is discounted to 2016 in accordance with EO 13771 guidance. At a discount rate of 3%, the PV is \$6.08 billion (in 2014 dollars), again discounted to 2016. A measure of the annual cost savings is the EAV. This annual impact estimate is calculated consistent with the PV. The EAV is \$163 million (2014 dollars) at 7% rate for the primary scenario. At a 3% discount rate, the EAV is \$183 million (2014 dollars). The PVs for each alternative scenario and discount rate in 2014 dollars can be found in Table 3-7; the EAVs are in Table 3-8.¹²

Table 3-7 Estimated Present Value of the Net Cost Savings for the Primary Alternative Scenario (75% Emissions Cutoff) (billions of 2014\$)

PV of Cost Savings by Alternative Scenario	7% Discount Rate	3% Discount Rate
50% Emissions Cutoff	1.9	4.8
75% Emissions Cutoff	2.3	6.1
125% Emissions Cutoff	2.8	7.6

Table 3-8 Estimated Equivalent Annualized Value of the Net Cost Savings of Scenario 2 (Primary) (millions of 2014\$)

EAV of Net Cost Savings	7% Discount Rate	3% Discount Rate
50% Emissions Cutoff	128	143
75% Emissions Cutoff	163	183
125% Emissions Cutoff	199	223

¹² Conversion from 2014 to 2016 dollars is accomplished using the annual GDP implicit price deflator. The 2016 value is 1.02147 times larger than the 2014 value. For more information, refer to <https://fred.stlouisfed.org/series/USAGDPDEFSAISMEI>. Accessed on October 23, 2018.

4. ILLUSTRATIVE EMISSIONS IMPACTS AND POTENTIAL CONTROL COST IMPACTS

4.1 Estimating Number of Facilities per Source Category and the Fraction That Could Obtain Area Source Status

As mentioned earlier in this RIA, the EPA used data from RTR modeling files to estimate individual HAP and total HAP emissions for individual facilities in 71 source categories. These 71 source categories are those for which the RTR modeling file had been completed and for which EPA expected that some major source facilities may potentially reclassify as area sources. This analysis is contained fully in the spreadsheet entitled, *MM2A_Illustrative Emissions Analysis Results May-2019.xlsx*, which is in the public docket for this rulemaking. In addition, 35 source categories were analyzed using an extrapolated approach (*i.e.*, using the cost information for the 71 source categories to estimate impacts for the 35 source categories). Three ICI Boilers and Process Heaters source categories and the RICE source category were separately assessed. For most of the sources in the ICI Boilers and Process Heaters categories and all of the RICE sources, it was determined that these major sources would not reclassify to area sources. Upon review by the EPA, of the 71 source categories with available data, the EPA determined that six source categories are not likely to be impacted by the change in policy and are not included in the analysis. These six categories are: Decorative Chromium Electroplating, Hard Chromium Electroplating, Other Chromium Electroplating, Secondary Lead, Wool Fiberglass, and Portland Cement. For these source categories, all facilities were estimated to be well over the major source emission threshold, or they were subject to NESHAP that regulated major and area sources to essentially the same standard. For the remaining 65 source categories, analysis to estimate individual and total HAP emissions for individual facilities was then undertaken. These 65 source categories are listed below.

Source Categories for Which EPA Has Complete Risk and Technology Review Modeling Files and Have Major Source Facilities Potentially Able to Reclassify to Area Sources

Acetal Resins
Aerospace - federal government owned
Aerospace - privately owned
AMF (Acrylic/Modacrylic Fibers)
Asphalt Processing and Roofing (2 Source Categories)
Auto and Light Duty Truck
Ethylene

Fabric
Ferroalloys
Flexible Foam Production
Friction
GMACT-HF
HCl Production
Integrated Iron and Steel
Large Appliances
Leather
Marine Vessel Loading
Metal Can
Metal Coil
Metal Furniture
Mineral Wool
Misc. Metal Parts
Miscellaneous Coating Manufacturing
Miscellaneous Organics NESHAP
Nutritional Yeast
Organic Liquids Distribution
OSWRO
P&R I (7 Source Categories)
P&R II (2 Source Categories)
P&R III
P&R IV (5 Source Categories)
PAI (Pesticide Active Ingredient Production)
PEPO (Polyether Polyols Production)
Pharmaceuticals
Phosphate Fertilizer
Phosphoric Acid
Plastic Parts
Polycarbonates
POTW
Primary Aluminum
Primary Lead-facility closed
Printing and Publishing
Pulp and Paper Combustion Sources
Refineries (2 Source Categories)
Secondary Aluminum
Shipbuilding
Steel Pickling
Turbines
Vegetable Oil
Wet Formed Fiberglass Mat
Wood Building Products
Wood Furniture

For each of these source categories, the EPA used the maximum HAP emissions from the RTR modeling file or the 2014 NEI v2 to estimate whether each facility would qualify to reclassify to area source status for the three emissions thresholds defined in Section 3 of this RIA, based on whole facility emissions estimates for individual HAP or total combined HAP:

- 50% of the major source threshold (5 tpy of a single HAP or 12.5 tpy of all combined HAP);
- 75% of the major source threshold (7.5 tpy of a single HAP or 18.75 tpy of all combined HAP); and
- 125% of the major source threshold (12.5 tpy of a single HAP or 31.25 tpy of all combined HAP).

This analysis is contained in the spreadsheet tab entitled *Revised_MM2A_Data_May_2019* that is included in the spreadsheet *MM2A_Illustrative Emissions Analysis Results May -2019.xlsx*, which is included in the docket for this rulemaking.

To assess potential change in emissions due to the reclassification of area sources as major sources, the EPA selected six source categories to be analyzed in more detail. These six source categories represent a cross-sample of the universe of source categories, control technologies and pollutants that could be impacted by the MM2A proposed action. The six source categories assessed for potential emission changes are: Wood Furniture Manufacturing (40 CFR part 63 subpart JJ), Surface Coatings of Metal Cans (40 CFR part 63 subpart KKKK), Surface Coatings of Miscellaneous Metal Parts and Products (40 CFR part 63 subpart MMMM), Wet-Formed Fiberglass Mat Production (40 CFR part 63 subpart HHHH), Hydrochloric Acid Production (40 CFR part 63 subpart NNNNN) and Organic Liquids Distribution (Non-Gasoline) (40 CFR part 63 subpart EEEE).

For each facility in these six source categories that could obtain area source status at each emissions threshold scenario, we estimated the potential change in HAP emissions by considering (1) whether total HAP emissions would change or (2) whether a single HAP's emissions would change to the threshold level as a result of assuming the facility would choose to reclassify to area source status. For each facility, we had an estimate from the NEI data of the total HAP emitted by the facility and the emissions of the single largest HAP from the facility.

If the total HAP and the single largest HAP were equal, this indicated only one HAP was reported in the NEI, and the change in emissions was calculated as the difference between 7.5 tpy and the estimate of the single largest HAP. Otherwise, the emissions change was estimated as the larger difference between 18.75 tpy and the estimate of total HAP emissions, and between 7.5 tpy and the single HAP emissions. We used these levels instead of assuming that emissions would change to 10 tpy for a single HAP or 25 tpy for all HAP because we instead assumed that facilities would maintain at a 25% compliance margin below the major HAP emissions source thresholds. A similar analysis was conducted for the 50% scenario, except the analysis was completed for 5 tpy of a single HAP and 12.5 tpy of combined HAP.

For the 125% scenario, we assumed that facilities with emissions below the 75% threshold would increase emissions to 7.5 tpy of a single HAP or 18.75 tpy of combined HAP, and facilities with emissions between the 75% and 125% thresholds would decrease emissions to 7.5 tpy of a single HAP or 18.75 tpy of combined HAP. These analyses are contained in the tab entitled *Revised MM2A Data 2019-05* in the illustrative analysis results spreadsheet previously mentioned in this chapter.

We determined that there are 605 more major sources under the 125% scenario that could potentially reclassify from major to area sources compared to the 75% scenario. This increase occurs across most of the 110 source categories included in the analyses for the proposal. More discussion on how these sources would achieve area source status by means of emissions control technologies can be found in section 4.2 below.

A detailed description of how the EPA identified and assessed the affected sources categories is provided in the May, 2019 ERG Cost Analysis Memorandum.

4.2 Control Technology Evaluation

We also considered in the emissions assessment the control technology basis for each NESHAP and the types of controls that are likely to be employed by facilities to meet the emissions limits. We considered whether the facility could adjust their annual HAP emissions to either increase or decrease them relative to the 50, 75- or 125% emissions thresholds by changing the efficiency of the controls for that source category. This assessment was done at the source category level and not at the facility level.

For each source category, we reviewed that category's proposed and final rule preambles, the technical support documents, or the rule itself to determine the technology basis for the emissions limitation for each class of pollutant regulated by the NESHAP. The results of these reviews are in the tab labeled *Controls* in the spreadsheet *MM2A_Data_for_Emissions AnalysisMay2019.xlsx*.

In general, we assumed that pollution prevention measures (*e.g.*, process changes or switches to low-HAP surface coatings) would not be adjustable, and facilities could not readily increase or decrease emissions. In the surface coating source categories, we assumed that facilities would not go through the process of identifying and testing new coatings with higher HAP contents or switching from low-HAP-emitting processes (*e.g.*, switching from powder coatings back to liquid coatings). We assumed that controls based on thermal oxidation as an add-on control were adjustable by, for example, adjusting the combustion temperature. We assumed that particulate controls for inorganic HAP (*e.g.*, fabric filters, electrostatic precipitators, wet scrubbers) were not adjustable.

For the surface coating source categories, we assumed that the emissions from most source categories were not adjustable because they rely on the use of low-HAP coatings to comply with the NESHAP. The exceptions were in the categories for Fabric Coating, Metal Can Coating, Coil Coating, and Printing and Publishing because these facilities generally use thermal oxidizers to control organic HAP emissions.

Regardless of the type of control that was the technology basis for the rule, if the EPA RTR project lead for a source category determined that no facilities in the source category would be able to obtain area source status or would have no incentive to obtain area source status, then we also assumed that the control technology was not adjustable.

The control assumption for each source category is documented in the tab *Control Assumptions* of the spreadsheet *MM2A_Illustrative Emissions Analysis Results May-2019.xlsx*. If the controls were estimated to be fixed and not adjustable, they were assigned a 0; if they were estimated to be adjustable, they were assigned a 1.

4.3 Detailed Illustrative Source Category Analyses

With the information described above, ERG and EPA performed more detailed analyses

on six source categories to illustrate the technology basis for the emissions limitations and the effects of the MM2A policy on the facilities in that source category, including the effect of other federal and state rules (*e.g.*, NSPS or state rules to limit VOC emissions in ozone non-attainment areas). To assess the potential emissions impact associated with the reclassification of sources, the EPA performed an illustrative assessment for six source categories (wood furniture, metal can, miscellaneous metal parts and products, wet-formed fiberglass, hydrochloric acid (HCl) production and non-gasoline organic liquid distribution (OLD)). A summary of the findings of our illustrative emission impact assessment is presented in Table 4-1.

Table 4-1: Results of Potential Emission Impacts Illustrative Analysis

Source Category, 40 CFR part 63 Subpart	Number of Facilities in Source Category Subject to Major Source NESHAP	Facilities Projected to Obtain Area Source Status at 75% Cut-off Scenario/ Percent	Potential HAP Increases (tpy) at 75% Cut-off Single and Total HAP	Additional Facilities Projected to Obtain Area Source Status at 125% Cut-off Scenario/Percent	Potential HAP Decreases (tpy) at 125% Cut-off/
Wood Furniture, Subpart JJ	333	250/75%	0	26/8%	0 to 125
Metal Can, Subpart KKKK	5	1/20%	0	2/40%	0 to 4
Miscellaneous Metal Parts and Products, Subpart MMMM	371	268/72%	0	46/12%	0 to 160
Wet Formed Fiberglass, Subpart HHHH	7	5/71%	0 to 6 single HAP 0 to 32 combined HAP	0	0
HCl Production, Subpart NNNNN	19	3/16%	0 to 11 single HAP 0 to 27 combined HAP	2/11%	0 to 4
Non-gasoline OLD, Subpart EEEE	177	82/46%	0 to 1,140 single HAP 0 to 1,140 combined HAP	19/11%	0 to 77

The results of our illustrative analysis show that for many facilities the reclassification from major source to area source status is not expected to result in an increase in that source’s HAP emissions. The analysis also shows that for many sources there are regulatory backstops in place that would prevent emissions increases (*e.g.*, other non-HAP regulatory requirements that also provide for HAP control). The analysis also confirmed that for some source categories no emissions increases and some emissions decreases can be anticipated. Finally, the results of our illustrative analysis show that for some facilities there is some potential for emissions increases.

We anticipate, however, that when the permitting authority reviews the application for a new or revised permit to reclassify a major source as an area source under section 112 of the CAA, the permitting authority will consider the current and proposed HAP emissions levels

and evaluate the potential for emissions increases due to reclassification and determine the safeguards needed to prevent any emissions increases due to reclassification. As discussed in more detail in sections IV and VI of the MM2A proposal preamble, there are various reasons why a major source's reclassification to area source status may not result in an increase in that source's HAP emissions and may, in some cases, result in a decrease in HAP emissions. First, when the corresponding regulatory authority reviews the application for a new or revised permit that will incorporate enforceable limits on a source's PTE of HAP below the major source thresholds, the regulatory authority will consider the specifics of each source. Among other things, the regulatory authority will consider the current and proposed HAP emissions levels, the type of limits proposed and whether such limits are legally and practicably enforceable, any newly applicable area source NESHAP subparts, and if other requirements are needed to ensure the source complies with the CAA. Second, some major sources have undergone facility and operational modifications since they became subject to the major source NESHAP requirements, and these modifications that may prevent the HAP emissions from exceeding the major source thresholds even without the sources remaining subject to major source NESHAP requirements (*e.g.*, a source that has eliminated the use of HAP binders or coatings from their operations or has switched to low HAP or no HAP products). Third, as discussed in sections IV and VI of the MM2A preamble, some sources with actual emissions just above one or both of the major source thresholds under their current major source NESHAP requirements might choose to accept HAP PTE limits and further reduce their emissions consistent with the PTE limits in order to achieve area source status and reduce their regulatory burden. In those cases, allowing sources to reclassify as area sources even after they are subject to major source NESHAP requirements can provide an incentive for them to reduce their emissions beyond what is required under the CAA section 112 major source requirements. More details on the illustrative emissions impact analysis and background information by source category can be found in the emissions memo¹³ and in Appendix B of the RIA.

¹³ US EPA. Memorandum from Elineth Torres to Docket No. EPA-HQ-OAR-2019-0282. Documentation of the emission impacts analysis for the proposed rulemaking: "Reclassification of Major Sources as Area Sources under Section 112 of the Clean Air Act." May, 2019.

4.4 Illustrative Source Category Cost Analyses for 125% Scenario (Alternative Scenario 2)

The analysis of the illustrative 125% scenario (alternative scenario 2) prepared for the MM2A proposal includes the reduction in monitoring, recordkeeping and reporting costs (and permitting costs) associated with a major HAP source reclassifying to an area HAP source. Such major sources have HAP emissions of 25% higher than the major source emissions thresholds (10 tons for one HAP, 25 tons for two or more HAP). We state earlier in this RIA that we are unable to estimate the cost associated with emissions control by major sources having to reduce HAP emissions as part of reclassifying to area sources. The increase in cost (either operating & maintenance or capital) from any reduction in emissions to achieve reclassification is a potential cost that sources may incur if reducing HAP emissions is a necessary component of this decision. Here, we present illustrative estimates of the potential control cost of reducing HAP emissions for a few source categories included in the analyses for the proposal. This illustrative analysis is a route by which the potential control costs associated with decisions to reclassify by major sources above the emissions thresholds can be characterized, and is fully documented in the cost considerations memorandum for the illustrative 125% scenario.¹⁴ Results of this analysis are not meant to serve as representative of impacts for all source categories affected by this proposal. This analysis is not applicable to sources at the other two scenarios examined in the proposal (50% and 75% HAP emissions cut-offs), for sources affected by those scenarios have HAP emissions already below to the major source emissions thresholds.

4.5 Coverage of Source Categories for this Analysis

Review of the MM2A analysis of potential cost savings for the illustrative 125% emissions scenario determined that there is a variety of sources across affected source categories. We reviewed the list of number of major sources expected to classify to area sources under this scenario.¹⁵ Our criterion for source category inclusion in this analysis is number of sources expected to reclassify from major to area under the analysis of potential cost savings for each category. Based on review of this list, the top five source categories by number of sources are:

¹⁴ U.S. EPA. Memorandum from Larry Sorrels, US EPA to Docket No. EPA-HQ-OAR-2019-0282. “Analysis of Illustrative 125% Scenario for MM2A Proposal – Potential Cost Impacts from HAP Major Sources Reducing Emissions as part of Reclassifying to HAP Area Sources.” May, 2019.

¹⁵ U.S. EPA. Proposal MM2A DataSpreadsheet May_2019. Available in the docket for this rulemaking.

- Miscellaneous Metal Parts coatings (17% of total)
- Wood Furniture coatings (15% of total)
- Turbines (9% of total)
- Printing and Publishing coatings (6% of total)
- Miscellaneous Organic NESHAP (6% of total, with fewer sources than Printing and Publishing coatings)

Table 4-2 provides a list of the source categories and the number of sources that are impacted under the illustrative 125% scenario.

Table 4-2. List of Source Categories Included in the Potential Cost Impact Analysis, and Number of Affected Sources

Source Category	Number of Affected Sources
Miscellaneous Metal Parts coatings	316
Wood Furniture coatings	277
Turbines*	160
Printing and Publishing coatings	115
Miscellaneous Organic NESHAP	106

* The stationary turbines source category was excluded from the illustrative emissions analysis as noted in the emissions memorandum for this proposal. We include the stationary turbines category in this analysis for the proposal since it meets the criterion set for source category inclusion.

We note that these five source categories constitute 52% of the total number of sources affected under this illustrative scenario. We also note that two of these categories (miscellaneous metal parts and wood furniture) are included in the illustrative emissions impacts analysis for six source categories included in the RIA, and part of this analysis included impacts for the illustrative 125% scenario. The illustrative emissions analysis examined the potential for sources in these categories to reclassify, and the potential impacts on emissions. We note that the impact on costs was not a part of this emissions analysis; it was an analysis based on control technologies/techniques likely to be in place on sources, and if non-HAP regulatory requirements may exist to reduce or prevent the potential for reclassifying.

4.6 Illustrative 125% Scenario Potential Cost Analysis Approach

In this analysis, we perform a “break-even” analysis to help inform whether a source would choose to apply control to reduce emissions under the scenario. This analysis includes the use of HAP control cost-effectiveness (that is, annual cost/ton HAP reduction) estimates for each of the five source categories. These estimates reflect the costs of HAP regulations previously imposed on these source categories, or represent EPA estimates of likely control options that sources could use to meet HAP emissions limits. These estimates are then used in our approach to examine if sources in these source categories would apply control to reduce emissions as part of reclassification. The cost-effectiveness estimates used in this analysis will include both capital (fixed) and O&M (variable) costs, for there was insufficient information in the documentation for these estimates presenting the breakout of annual costs into these two components. We also derived, to the extent possible, cost-effectiveness estimates that do not include any monitoring, recordkeeping, and reporting costs that are already found in the cost savings analysis done for these source categories in order to limit double counting. We recognize that findings from the review of the 34 reclassified sources in the emissions memo appear to show that the HAP control equipment in place prior to reclassification continues to be operated after reclassification.¹⁶ Thus, the most relevant cost for a determination of what cost value is “break-even” would be the O&M costs. Using these HAP cost-effectiveness estimates therefore could lead to an overstatement of the annual cost per ton that could serve as a “break-even” value for a source to reduce emissions as part of reclassifying from major to area source. Use of results from this analysis should only be regarded as illustrative, for they do not include results from all, or most, source categories potentially affected by this proposal. Thus, they cannot be used to present a complete treatment of control cost impacts for the illustrative 125% scenario.

We also acknowledge that the costs in these estimates may not reflect true marginal costs in that they presume the average costs of control are suitable for “break-even” decision-making by major sources considering reclassification.

¹⁶ U.S. EPA. Memorandum from Elineth Torres to Docket No. EPA-HQ-OAR-2019-0282. DRAFT Documentation of the emission impacts analysis for the proposed rulemaking “Reclassification of Major Sources as Area Sources under Section 112 of the Clean Air Act.” May, 2019.

Table 4-3 presents the HAP cost-effectiveness estimate used in this analysis for each of the five source categories. All of these cost-effectiveness estimates are in 2014 dollars in order to be consistent with the year dollars for the annual cost savings estimates presented in the cost memo and RIA for this proposal.

Table 4-3. HAP Cost- Effectiveness Estimates for Source Categories Included in Potential Cost Impact Analysis

Source Category	HAP Cost-Effectiveness Estimate (annual cost/ton HAP reduction in 2014\$)
Miscellaneous Metal Parts coatings	\$3,070
Wood Furniture coatings	32,363
Turbines	96,682
Printing and Publishing coatings	75,218
Miscellaneous Organic NESHAP (MON)	21,300

Determining the appropriate cost-effectiveness for each source category to use in this analysis is not always a simple matter. There are often differences in the extent and timing of cost analyses for different source categories, and determining an appropriate cost-effectiveness may require more than trivial amounts of analysis in individual circumstances. Below is a brief discussion of the cost-effectiveness estimates for each category and how they are derived.

4.7 Cost-Effectiveness Estimate Derivation

Miscellaneous Metal Parts coatings – The estimate was derived by dividing the total annualized cost for the 2003 final NESHAP by the expected HAP emission reductions. For this final rule, the total annualized cost was \$47.3 million (in 1997 dollars), and the expected emission reductions were 25,822 tons/year.¹⁷ The cost-effectiveness is \$2,204/ton HAP emission reduction in 1997 dollars. Escalation to 2014 dollars is accomplished the U.S. Gross Domestic Product (GDP) implicit price deflator. This value is 1.393, where the 2014 value is 103.680 and the 1997 value is 74.445.¹⁸ Therefore, the cost-effectiveness in 2014 dollars is \$3,070/ton.

¹⁷ U.S. EPA. NESHAP for Miscellaneous Metal Parts and Products, Final Rule. 69 FR 130. Published on January 2, 2004. Available at <https://www.govinfo.gov/content/pkg/FR-2004-01-02/pdf/03-21917.pdf>. Downloaded on May 14, 2019.

¹⁸ U.S. Federal Reserve Board, St. Louis. Gross Domestic Product (GDP implicit price deflator). Index: 2012=100. Annual Values. Available at <https://fred.stlouisfed.org/series/A191RD3A086NBEA>. Downloaded on May 14, 2019.

Wood Furniture coatings – The estimate was taken from an EPA cost memorandum prepared in 2010 to examine HAP control options for facilities subject to the wood furniture coatings MACT.¹⁹ The control option that is the basis for the cost-effectiveness estimate used in the current analysis is the use of low VOC coatings. The VOC cost-effectiveness estimate for this option is \$15,000/ton; with the amount of VOC that is HAP estimated at one-half, the resulting HAP cost-effectiveness is \$30,000/ton. With this estimate in 2010 dollars, we escalated the value to 2014 dollars by using the U.S. GDP implicit price deflator. This value is 1.079, where the 2014 value is 103.680 and the 2010 value is 96.111.²⁰ Therefore, the cost-effectiveness in 2014 dollars is \$32,363/ton.

Turbines – The estimate was derived from an EPA memorandum that provides cost per ton estimates for control options applied to turbines of different sizes. We did not include emergency turbines in this estimate since these sources only operate at limited times of a year. Presuming the use of prime mover turbines only, and using values based on average emission factors for calculating baseline HAP emissions, we derived a cost-effectiveness estimate of \$70,202/ton in 1998 dollars. Escalation to 2014 dollars is accomplished the U.S. Gross Domestic Product (GDP) implicit price deflator. This value is 1.377, where the 2014 value is 103.680 and the 1998 value is 75.283.²¹ Therefore, the cost-effectiveness in 2014 dollars is \$96,682/ton.

Printing and Publishing – The estimate was taken from a retrofit cost estimate of \$50,000/ton (1993\$) from cost analysis for the final Printing and Publishing NESHAP for the use of a permanent total enclosure to confine VOC or HAP emissions.²² Escalation to 2014

¹⁹ U.S. EPA. Memorandum from Kaye Whitfield to Docket No. EPA-HQ-OAR-2010-0786. Cost Analyses for Control Options. September 27, 2010. Prepared for the Wood Furniture Manufacturing Operations NESHAP, Final Rule.

²⁰ U.S. Federal Reserve Board, St. Louis. Gross Domestic Product (GDP implicit price deflator). Index: 2012-100. Annual Values. Available at <https://fred.stlouisfed.org/series/A191RD3A086NBEA>. Downloaded on May 14, 2019.

²¹ U.S. Federal Reserve Board, St. Louis. Gross Domestic Product (GDP implicit price deflator). Index: 2012-100. Annual Values. Available at <https://fred.stlouisfed.org/series/A191RD3A086NBEA>. Downloaded on May 14, 2019.

²² U.S. EPA. Printing and Publishing Industry NESHAP, Final Rule. 61 FR 27132. Published on May 30, 1996. Available at <https://www.govinfo.gov/content/pkg/FR-1996-05-30/pdf/96-13084.pdf>. Downloaded on May 15, 2019.

dollars is accomplished the U.S. Gross Domestic Product (GDP) implicit price deflator. This value is 1.504, where the 2014 value is 103.680 and the 1993 value is 68.920.²³ Therefore, the cost-effectiveness in 2014 dollars is \$75,218/ton.

Miscellaneous Organic NESHAP (MON)- The estimate was taken from the final rule notice, in which the cost-effectiveness of several control options was examined. These control options generally ranged from \$15,000-\$51,000/megagram (Mg) (or \$13,640-\$46,410/ton) in 1998 dollars. Given the predominance of control options that were between \$15,000-\$19,000/Mg (or \$13,640-\$17,290/ton), we use the midpoint of the latter range to come up with a cost-effectiveness for the current analysis of \$15,470/ton in 1998 dollars.²⁴ Escalation to 2014 dollars is accomplished the U.S. Gross Domestic Product (GDP) implicit price deflator. This value is 1.377, where the 2014 value is 103.680 and the 1998 value is 75.283.²⁵ Therefore, the cost-effectiveness in 2014 dollars is \$21,300/ton.

4.8 Illustrative Results for the Potential Cost Impact Analysis Considering the Illustrative Emissions Analysis

The two source categories that are included in both the illustrative emissions analysis, which can be found in the cost memo and in the RIA, and this potential cost analysis are wood furniture and miscellaneous metal parts and products. The net change in HAP emissions for these source categories according to the results of the illustrative emissions analysis was a decrease in the range of 0 to 125 and 0 to 160 tons, respectively.²⁶ As stated in the emissions memo and RIA, the cost of controls is not considered in calculating these illustrative changes in emissions for each source category included in the illustrative analysis.

²³ U.S. Federal Reserve Board, St. Louis. Gross Domestic Product (GDP implicit price deflator). Index: 2012-100. Annual Values. Available at <https://fred.stlouisfed.org/series/A191RD3A086NBEA>. Downloaded on May 14, 2019.

²⁴ U.S. EPA. Miscellaneous Organic NESHAP (MON), Final Rule. 68 FR 63852. Published in the Federal Register on November 10, 2003. Available at <https://www.govinfo.gov/content/pkg/FR-2003-11-10/pdf/03-22310.pdf>. Downloaded on May 14, 2019.

²⁵ U.S. Federal Reserve Board, St. Louis. Gross Domestic Product (GDP implicit price deflator). Index: 2012-100. Annual Values. Available at <https://fred.stlouisfed.org/series/A191RD3A086NBEA>. Downloaded on May 14, 2019.

²⁶ U.S. EPA. Memorandum from Elineth Torres to Docket No. EPA-HQ-OAR-2019-0282. Documentation of the emission impacts analysis for the proposed rulemaking "Reclassification of Major Sources as Area Sources under Section 112 of the Clean Air Act." May, 2019.

If we use cost-effectiveness estimates to calculate a potential cost of control for the emissions decreases obtained by the illustrative emissions analysis for these two source categories, we estimate a potential annual control cost (in 2014 dollars) of \$0-4,045,250 for the wood furniture source category, and \$0-491,200 for the miscellaneous metal parts and products source category. Comparing these estimates to those for potential cost savings under the illustrative 125% scenario for these source categories, which are \$352,599 for wood furniture and \$1,356,728 for miscellaneous metal parts and products, we find that the potential net cost change (control cost minus cost savings, where a negative sign means cost savings) for these source categories is \$-352,599 to \$+3,692,651, and \$-1,356,728 to \$-865,528, respectively.²⁷ Thus, these illustrative analyses suggest that there could be net potential cost savings when control costs are considered for the miscellaneous metal parts and products category, while there is a greater likelihood of potential net cost savings for the wood furniture category.

4.9 Limitations of Illustrative 125% Potential Cost Impact Analysis

There are three limitations with this analysis that are important to mention. As we indicate earlier, the cost-effectiveness estimates derived for this analysis are likely to be overestimates of the potential cost of control that major HAP sources at the 125% emissions threshold would incur to reduce emissions for purposes of reclassifying to area source status for they include capital costs, which may not be a factor in reclassification decisions according to the review of reclassified major sources done for this proposal. Thus, the results of this “break-even” analysis may understate the potential for additional emission reductions for reclassification purposes by overstating the “break-even” costs for these source categories.

We also note that the extent of cost escalation in this analysis is often driven by the vintage of the cost data that is the basis for the cost-effectiveness estimates. For four of these estimates, the escalation period is longer than five years. This is not consistent with the recommendation in the EPA Air Pollution Control Cost Manual that five years is the preferred

²⁷ U.S. EPA. Proposal MM2A DataSpreadsheetMay_2019. Available in the docket for this rulemaking.

duration for cost escalation.²⁸ Given the age of the cost data, however, we did not have an alternative to adjust these costs into 2014 dollars.

We also acknowledge that the costs included in these estimates may not reflect true marginal costs for major sources in that they presume the average costs of control are suitable for “break-even” decision-making by major sources considering reclassification, while decisions by sources to reduce emissions will be made based on their marginal costs of control and production on the margin of affordability.

²⁸ U.S. EPA. EPA Air Pollution Control Cost Manual. Section 1, Chapter 2. Cost Estimation: Costs and Methodology. February 1, 2018. Available at https://www.epa.gov/sites/production/files/2017-12/documents/epacmcostestimationmethodchapter_7thedition_2017.pdf. p. 19.

5. BENEFITS/DISBENEFITS

5.1 Introduction

This section describes the human health impacts associated with the proposed rule. This proposed rule may potentially result in both emission reductions and increases from a broad array of existing sources. As described in Section 4, pollutant emissions that may be affected by the rule include VOCs, which are precursors to both (PM_{2.5}) and ozone formation; SO₂, which is a precursor to (PM_{2.5}); NO_x, which is a precursor to both PM_{2.5} and ground-level ozone; organic HAP such as benzene, ethylbenzene, toluene, and vinyl chloride; and methane, a GHG and a precursor to ozone formation. As described in the subsequent sections, these pollutants are associated with substantial health effects, climate effects, and other welfare effects.

We are uncertain as to the magnitude, direction, and distribution of these changes in emissions. As such, we are unable to quantify the changes in emissions across these sources and can neither simulate the change in air quality nor characterize the impact of these changes to human health. This is not to imply that changes in emissions will not affect human health. Rather, our approach reflects the challenges associated with modeling the direct and indirect impacts of the reductions in emissions for these sectors with the data currently available.

In place of quantitative estimates of the economic value of the pollutant changes, we instead characterize these impacts in qualitative terms. In this section, we provide a qualitative assessment of the health benefits associated with altering exposure to these pollutants and the visibility impairment and ecosystem benefits.

5.2 PM_{2.5} Benefits/Disbenefits

This rulemaking may potentially alter directly emitted PM_{2.5} and/or precursors to PM_{2.5} including NO_x and SO₂. Changing these emissions would affect PM_{2.5} formation, human exposure to PM_{2.5}, and the incidence of PM_{2.5}-related health effects. Limits to data, resources, and methods prevented the EPA from estimating the health impacts and monetized benefits of the potentially altered PM_{2.5} concentrations resulting from this proposal. However, we provide the qualitative discussion below for context regarding potential implications of the proposed rule.

5.2.1 *PM_{2.5} Health Effects*

Changing PM_{2.5} precursors and directly emitted PM_{2.5} would alter human exposure to PM_{2.5} and the incidence of PM_{2.5}-related health effects. Human health effects of PM_{2.5} exposure include mortality and cardiovascular morbidity (U.S. EPA, 2009a). More specifically, researchers have associated PM_{2.5} exposure with adverse health effects in numerous toxicological, clinical, and epidemiological studies. These health effects include premature death in people with heart or lung disease; nonfatal heart attacks; irregular heartbeat; aggravated asthma; decreased lung function; and increased respiratory symptoms, such as irritation of the airways, coughing, and difficulty breathing (U.S. EPA, 2009a). These health effects result in hospital and emergency room visits, lost work days, and restricted activity days. When adequate data and resources are available, the EPA generally quantifies several health effects associated with exposure to PM_{2.5} (*e.g.*, U.S. EPA, 2009a).

When the EPA quantifies PM_{2.5}-related benefits, the EPA assumes that all fine particles, regardless of their chemical composition, are equally potent in causing premature mortality because the scientific evidence is not yet sufficient to allow differentiation of effect estimates by particle type (U.S. EPA, 2009a). Based on our review of the current body of scientific literature, the EPA estimates PM_{2.5}-related mortality without applying an assumed concentration threshold. This decision is supported by the data, which are quite consistent in showing effects down to the lowest measured levels of PM_{2.5} in the underlying epidemiology studies.

Several significant ecological effects are associated with the deposition of organic particles, including persistent organic pollutants, and polycyclic aromatic hydrocarbons (PAHs) (U.S. EPA, 2009a). This summary is from Section 6.6.1 of the 2012 PM National Ambient Air Quality Standards (NAAQS) RIA (U.S. EPA, 2012b).

PAHs can accumulate in sediments and bioaccumulate in freshwater, flora, and fauna. The uptake of organics depends on the plant species, site of deposition, physical and chemical properties of the organic compound, and prevailing environmental conditions (U.S. EPA, 2009a). PAHs can accumulate to high enough concentrations in some coastal environments to pose an environmental health threat that includes cancer in fish populations, toxicity to organisms living in the sediment, and risks to those (*e.g.*, migratory birds) that consume these organisms. Atmospheric deposition of particles is thought to be the major source of PAHs to the sediments

of coastal areas of the United States. Deposition of PM to surfaces in urban settings increases the metal and organic component of stormwater runoff. This atmospherically associated pollutant burden can then be toxic to aquatic biota. The contribution of atmospherically deposited PAHs to aquatic food webs was demonstrated in high-elevation mountain lakes with no other anthropogenic contaminant sources.

The Western Airborne Contaminants Assessment Project is the most comprehensive database available on contaminant transport and the effects of PM deposition on sensitive ecosystems in the western United States. (Landers *et al.*, 2008). In this project, the transport, fate, and ecological impacts of anthropogenic contaminants from atmospheric sources were assessed from 2002 to 2007 in seven ecosystem components (air, snow, water, sediment, lichen, conifer needles, and fish) in eight core national parks. The study concluded that bioaccumulation of semivolatile organic compounds occurred throughout park ecosystems, that an elevational gradient in PM deposition exists with greater accumulation in higher altitude areas, and that contaminants accumulate in proximity to individual agriculture and industry sources, which is counter to the original working hypothesis that most of the contaminants would originate from Eastern Europe and Asia.

5.2.2 Visibility Effects

Altering directly emitted and secondarily formed PM_{2.5} could affect visibility throughout the United States. Fine particles with significant light-extinction efficiencies include sulfates, nitrates, organic carbon, elemental carbon, and soil (Sisler, 1996). Suspended particles and gases degrade visibility by scattering and absorbing light. Higher visibility impairment levels in the East are due to higher concentrations of fine particles, particularly sulfates, and higher average relative humidity levels. Visibility impairment has a direct impact on people's enjoyment of daily activities and their overall sense of well-being. Good visibility increases the quality of life where individuals live and work and where they engage in recreational activities. Previous analyses (U.S. EPA, 2006b; 2009a; 2011a; 2012b) show that visibility benefits are a significant welfare benefit category. However, without air quality modeling, we are unable to estimate visibility-related benefits or disbenefits, nor are we able to determine whether PM_{2.5} precursor emissions would likely have a significant impact on visibility in urban areas or Class I areas.

5.3 Ozone Effects

This rulemaking may potentially alter ground-level ozone concentrations. Ozone is not emitted directly into the air but is created when its two primary components, VOC and NO_x, react in the presence of sunlight. In urban areas, compounds representing all classes of VOCs and carbon monoxide are important compounds for ozone formation, but VOCs emitted from vegetation tend to be more important compounds in nonurban vegetated areas (U.S. EPA, 2013). Therefore, reducing these emissions would reduce ozone formation, human exposure to ozone, and the incidence of ozone-related health effects. However, we have not quantified the ozone-related benefits in this analysis for several reasons. First, previous rules have shown that the monetized benefits associated with reducing ozone exposure are generally smaller than PM-related benefits, even when ozone is the pollutant targeted for control (U.S. EPA, 2010b; 2014a). Second, the complex nonlinear chemistry of ozone formation introduces uncertainty to the development and application of a benefit-per-ton estimate, particularly for sectors with substantial new growth.

Third, the impact of changing VOC emissions is spatially heterogeneous depending on local air chemistry. Urban areas with a high population concentration are often VOC limited, which means that ozone is most effectively reduced by lowering VOC emissions. Rural areas and downwind suburban areas are often NO_x limited, which means that ozone concentrations are most effectively reduced by lowering NO_x emissions rather than lowering VOC emissions. Between these areas, ozone is relatively insensitive to marginal changes in both NO_x and VOC.

Because of data limitations such as the location and number of sources affected by this rulemaking, we did not perform the air quality modeling for this rule needed to quantify the ozone benefits/disbenefits associated with reducing VOC emissions. Because of the high degree of variability in the responsiveness of ozone formation to VOC emission reductions and data limitations regarding the location of the emissions changes, we are unable to estimate the effect that reducing VOC emissions will have on ambient ozone concentrations without air quality modeling.

5.3.1 Ozone Health Effects

Human exposure to ambient ozone concentrations is associated with adverse health benefits, including premature death and respiratory morbidity (U.S. EPA, 2010b). Researchers have associated ozone exposure with adverse health effects in numerous toxicological, clinical, and epidemiological studies (U.S. EPA, 2013). When adequate data and resources are available, the EPA generally quantifies several health effects associated with exposure to ozone (*e.g.*, U.S. EPA, 2010b; 2011a). These health effects include respiratory morbidity, such as asthma attacks; hospital and emergency department visits; lost school days and premature mortality. The scientific literature also suggests that exposure to ozone is associated with chronic respiratory damage and premature aging of the lungs.

5.3.2 Ozone Vegetation Effects

Exposure to ozone is associated with a wide array of vegetation and ecosystem effects in the published literature (U.S. EPA, 2013). Sensitivity to ozone is highly variable across species, with over 66 vegetation species identified as “ozone-sensitive,” many of which are found in state and national parks and forests. These effects include those that damage or impair the intended use of the plant or ecosystem. Such effects are considered adverse to the public welfare and can include reduced growth and/or biomass production in sensitive trees, reduced yield and quality of crops, visible foliar injury, changes to species composition, and changes in ecosystems and associated ecosystem services.

5.3.3 Ozone Climate Effects

Ozone is a well-known short-lived climate-forcing GHG (U.S. EPA, 2006a). Stratospheric ozone (the upper ozone layer) is beneficial because it protects life on Earth from the sun’s harmful ultraviolet radiation. In contrast, tropospheric ozone (ozone in the lower atmosphere) is a harmful air pollutant that adversely affects human health and the environment and contributes significantly to regional and global climate change. Because of its short atmospheric lifetime, tropospheric ozone concentrations exhibit large spatial and temporal variability (U.S. EPA, 2009b). The Intergovernmental Panel on Climate Change Fifth Assessment Report estimated that the contribution to current warming levels of increased tropospheric ozone concentrations resulting from human methane, NO_x, and VOC emissions was

0.5 W/m², or about 30 percent as large a warming influence as elevated CO₂ concentrations (IPCC, 2014). This quantifiable influence of ground-level ozone on climate leads to increases in global surface temperature and changes in hydrological cycles.

5.4 NO₂ Health Effects

In addition to being a precursor to PM_{2.5} and ozone, NO_x emissions are linked to a variety of adverse health effects associated with direct exposure. Following a comprehensive review of health evidence from epidemiologic and laboratory studies, the *Integrated Science Assessment for Oxides of Nitrogen—Health Criteria* (NO_x ISA) (U.S. EPA, 2016b) concluded that a causal relationship exists between respiratory health effects and short-term exposure to NO₂. These epidemiologic and experimental studies encompass several endpoints, including emergency department visits and hospitalizations, respiratory symptoms, airway hyperresponsiveness, airway inflammation, and lung function. The NO_x ISA also concluded that the relationship between short-term NO₂ exposure and premature mortality was “suggestive but not sufficient to infer a causal relationship” (U.S. EPA, 2016b, page 5-343) because it is difficult to attribute the mortality risk effects to NO₂ alone. Although the NO_x ISA stated that studies consistently reported a relationship between NO₂ exposure and mortality, the effect was generally smaller than that for other pollutants such as PM. However, because of methodology and data limitations, we were unable to estimate the health co-benefits/disbenefits associated with altered NO₂ emissions or exposure in this proposed rule.

5.5 SO₂ Health Effects

In addition to being a precursor to PM_{2.5}, SO₂ emissions are linked to a variety of adverse health effects associated with direct exposure. We were unable to estimate the health co-benefits associated with reduced SO₂ in this analysis. Therefore, this analysis only provides a qualitative discussion of the PM_{2.5} co-benefits associated with the reductions in SO₂ emissions.

Following an extensive evaluation of health evidence from epidemiologic and laboratory studies, the *Integrated Science Assessment for Oxides of Sulfur—Health Criteria* (SO₂ ISA) concluded that a causal relationship exists between respiratory health effects and short-term exposure to SO₂ (U.S. EPA, 2017). The immediate effect of SO₂ on the respiratory system in humans is bronchoconstriction. Asthmatics are more sensitive to the effects of SO₂ likely

resulting from preexisting inflammation associated with this disease. A clear concentration-response relationship has been demonstrated in laboratory studies following exposures to SO₂ at concentrations between 20 and 100 ppb, both in terms of increasing severity of effect and percentage of asthmatics adversely affected. Based on our review of this information, we identified three short-term morbidity endpoints that the SO₂ ISA identified as a “causal relationship”: asthma exacerbation, respiratory-related emergency department visits, and respiratory-related hospitalizations. The differing evidence and associated strength of the evidence for these different effects are described in detail in the SO₂ ISA. The SO₂ ISA also concluded that the relationship between short-term SO₂ exposure and premature mortality was “suggestive of a causal relationship” (U.S. EPA, 2017, page 5-277) because it is difficult to attribute the mortality risk effects to SO₂ alone. Although the SO₂ ISA stated that studies are generally consistent in reporting a relationship between SO₂ exposure and mortality, the observed associations to adjustment for other pollutants lacked robustness. We did not quantify these co-benefits because of data constraints.

5.6 NO₂ and SO₂ Health Co-Benefits/Co-Disbenefits

As described in the *Integrated Science Assessment for Oxides of Nitrogen and Sulfur—Ecological Criteria* (NO_x/SO_x ISA) (U.S. EPA, 2008), SO₂ and NO_x emissions also contribute to a variety of adverse welfare effects, including those associated with acidic deposition, visibility impairment, and nutrient enrichment. Deposition of nitrogen causes acidification, which can cause a loss of biodiversity of fishes, zooplankton, and macroinvertebrates in aquatic ecosystems, as well as a decline in sensitive tree species, such as red spruce (*Picea rubens*) and sugar maple (*Acer saccharum*) in terrestrial ecosystems. In the northeastern United States, the surface waters affected by acidification are a source of food for some recreational and subsistence fishermen and for other consumers and support several cultural services, including aesthetic and educational services and recreational fishing. Biological effects of acidification in terrestrial ecosystems are generally linked to aluminum toxicity, which can cause reduced root growth, restricting the ability of the plant to take up water and nutrients. These direct effects can, in turn, increase the sensitivity of these plants to stresses, such as droughts, cold temperatures, insect pests, and disease, leading to increased mortality of canopy trees. Terrestrial acidification affects several important ecological services, including declines in habitat for threatened and

endangered species (cultural), declines in forest aesthetics (cultural), declines in forest productivity (provisioning), and increases in forest soil erosion and reductions in water retention (cultural and regulating) (U.S. EPA, 2008).

Deposition of nitrogen is also associated with aquatic and terrestrial nutrient enrichment. In estuarine waters, excess nutrient enrichment can lead to eutrophication. Eutrophication of estuaries can disrupt an important source of food production, particularly fish and shellfish production, and a variety of cultural ecosystem services, including water-based recreational and aesthetic services. Terrestrial nutrient enrichment is associated with changes in the types and number of species and biodiversity in terrestrial systems. Excessive nitrogen deposition upsets the balance between native and nonnative plants, changing the ability of an area to support biodiversity. When the composition of species changes, then fire frequency and intensity can also change, as non-native grasses fuel more frequent and more intense wildfires (U.S. EPA, 2008).

Reductions in emissions of NO₂ and SO₂ would improve the levels of visibility and increases in emissions would degrade the levels of visibility throughout the United States because these gases (and the particles of nitrate and sulfate formed from these gases) impair visibility by scattering and absorbing light (U.S. EPA, 2009a). Visibility is also referred to as visual air quality, and it directly affects people's enjoyment of a variety of daily activities (U.S. EPA, 2009a). Good visibility increases quality of life where individuals live and work and where they travel for recreational activities, including sites of unique public value, such as the Great Smoky Mountains National Park (U.S. EPA, 2009a).

5.7 Hazardous Air Pollutant (HAP) Health Impacts

Because of methodology and resource limitations, we did not attempt to estimate the impacts associated with changes in emissions of the HAP in this analysis. Instead, we provide a qualitative analysis of the health effects associated with the various HAP that may be affected by this rule. The EPA remains committed to improving methods for estimating HAP benefits/disbenefits by continuing to explore additional concepts of benefits, including changes in the distribution of risk. The EPA's Science Advisory Board Health Effects Subcommittee concluded that "the challenges for assessing progress in health improvement as a result of reductions in emissions of HAP are daunting ... due to a lack of exposure-response functions,

uncertainties in emissions inventories and background levels, the difficulty of extrapolating risk estimates to low doses and the challenges of tracking health progress for diseases, such as cancer, that have long latency “periods” (EPA-SAB, 2008, page i). In 2009, the EPA convened a workshop to address the inherent complexities, limitations, and uncertainties in current methods to quantify the benefits of reducing HAP. Recommendations from this workshop included identifying research priorities, focusing on susceptible and vulnerable populations, and improving dose-response relationships (Gwinn *et al.*, 2011).

In the subsequent sections, we describe the health effects associated with the main HAP of concern from the various sectors included in this rulemaking: benzene, ethylbenzene, toluene, and vinyl chloride. With the data available, it was not possible to estimate the tons of each individual HAP that would be reduced.

5.7.1 Benzene

The EPA’s Integrated Risk Information System (IRIS) database lists benzene as a known human carcinogen (causing leukemia) by all routes of exposure and concludes that its exposure is associated with additional health effects, including genetic changes in both humans and animals, and increased proliferation of bone marrow cells in mice (U.S. EPA, 2000a; International Agency for Research on Cancer [IARC], 1982; Irons, Stillman, Colagiovanni, and Henry, 1992). The EPA states in its IRIS database that data indicate a causal relationship between benzene exposure and acute lymphocytic leukemia and suggest a relationship between benzene exposure and chronic nonlymphocytic leukemia and chronic lymphocytic leukemia. IARC has determined that benzene is a human carcinogen, and the U.S. Department of Health and Human Services has characterized benzene as a known human carcinogen (IARC, 1987; U.S. Department of Health and Human Services, 2016).

Several adverse non-cancer health effects, including blood disorders such as preleukemia and aplastic anemia, have also been associated with long-term exposure to benzene (Aksoy, 1989; Goldstein, 1988).

5.7.2 Ethylbenzene

Ethylbenzene is a major industrial chemical produced by alkylation of benzene. The pure chemical is used almost exclusively for styrene production. It is also a constituent of crude

petroleum and is found in gasoline and diesel fuels. Acute (short-term) exposure to ethylbenzene in humans results in respiratory effects such as throat irritation and chest constriction, irritation of the eyes and neurological effects such as dizziness. Chronic (long-term) exposure of humans to ethylbenzene may cause eye and lung irritation, with possible adverse effects on the blood. Animal studies have reported effects on the blood, liver, kidneys and endocrine system from chronic inhalation exposure to ethylbenzene. No information is available on the developmental or reproductive effects of ethylbenzene in humans, but animal studies have reported developmental effects, including birth defects in animals exposed via inhalation.

Studies in rodents reported increases in the percentage of animals with tumors of the nasal and oral cavities in male and female rats exposed to ethylbenzene via the oral route (Maltoni, Conti, Giuliano, and Belpoggi, 1985; Maltoni, Ciliberti, Pinto, Soffritti, Belpoggi, and Menarini, 1997). The reports of these studies lacked detailed information on the incidence of specific tumors, statistical analysis, survival data, and information on historical controls; thus, the results of these studies were considered inconclusive by the IARC (2000) and the National Toxicology Program (NTP) (1999). The NTP (1999) carried out a chronic inhalation bioassay in mice and rats and found clear evidence of carcinogenic activity in male rats and some evidence in female rats, based on increased incidences of renal tubule adenoma or carcinoma in male rats and renal tubule adenoma in females. NTP (1999) also noted increases in the incidence of testicular adenoma in male rats. Increased incidences of lung alveolar/bronchiolar adenoma or carcinoma were observed in male mice and liver hepatocellular adenoma or carcinoma in female mice, which provided some evidence of carcinogenic activity in male and female mice (NTP, 1999). IARC (2000) classified ethylbenzene as Group 2B, possibly carcinogenic to humans, based on the NTP studies.

5.7.3 Toluene²⁹

Under the 2005 Guidelines for Carcinogen Risk Assessment, there is inadequate information to assess the carcinogenic potential of toluene because studies of humans chronically exposed to toluene are inconclusive, and toluene was not carcinogenic in adequate inhalation cancer bioassays of rats and mice exposed for life (Chemical Industry Institute of Toxicology

²⁹ All health effects language for this section came from U.S. EPA (2005).

[CIIT], 1980; NTP, 1990; Huff, 2003). Increased incidences of mammary cancer and leukemia were reported in a lifetime rat oral bioassay (Maltoni, Ciliberti, Pinto, *et al.*, 1997); however, this evidence was considered equivocal because cancers were observed at the low dose tested (500 mg/kg/day) but not at the higher dose tested (800 mg/kg/day). In support of the EPA's cancer classification, IARC has classified toluene as Group 3 (*not classifiable as to its carcinogenicity in humans*) with a supporting statement that there is inadequate evidence in humans and evidence suggesting a lack of carcinogenicity of toluene in experimental animals (IARC, 1999). The central nervous system (CNS) is the primary target for toluene toxicity in both humans and animals for acute and chronic exposures. CNS dysfunction (which is often reversible) and narcosis have been frequently observed in humans acutely exposed to low or moderate levels of toluene by inhalation; symptoms include fatigue, sleepiness, headaches, and nausea. CNS depression has been reported to occur in chronic solvent abusers exposed to high levels of toluene. Symptoms include ataxia; tremors; cerebral atrophy; nystagmus (involuntary eye movements); and impaired speech, hearing and vision. Chronic inhalation exposure of humans to toluene also causes irritation of the upper respiratory tract, eye irritation, dizziness, headaches, and difficulty with sleep.

Human studies have also reported developmental effects, such as CNS dysfunction, attention deficits, and minor craniofacial and limb anomalies, in the children of women who abused toluene during pregnancy. A substantial database exists that examines the effects of toluene in subchronic and chronic occupationally exposed humans exists. The weight of evidence from these studies indicates neurological effects (*i.e.*, impaired color vision, impaired hearing, decreased performance in neurobehavioral analysis, changes in motor and sensory nerve conduction velocity, headache, and dizziness) as the most sensitive endpoint.

5.7.4 Vinyl Chloride³⁰

Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Acute (short-term) exposure to high levels of vinyl chloride in air has resulted in CNS effects, such as dizziness, drowsiness and headaches in humans. Chronic (long-term) exposure to vinyl chloride through inhalation and oral exposure in humans has resulted in liver

³⁰ Source for this section is U.S. EPA (2000).

damage. Cancer is a major concern from exposure to vinyl chloride via inhalation, because vinyl chloride exposure has been shown to increase the risk of a rare form of liver cancer in humans. The EPA (2000b) has classified vinyl chloride as a Group A human carcinogen. IARC (2000) has classified vinyl chloride as carcinogenic to humans (Group 1).

5.7.5 *Other Air Toxics*

In addition to the compounds described above, other air toxic compounds might be potentially affected by this rule. Information regarding the health effects of those compounds can be found in the EPA's IRIS database.

6. IMPACTS OF REGULATORY RELIEF

This proposed rulemaking should be viewed as regulatory relief for major sources of HAP that may be reclassified as area sources. This RIA illustrates the administrative burden costs avoided as a result of this rule. The costs for state permitting authorities for the issuance of area source permits are also reported. To estimate the avoided administrative costs, the EPA estimated the permitting costs to the facilities and the state agencies, the projected annual compliance cost savings from not having to comply with major source NESHAP requirements, and the estimated costs of the area source rule requirements. The EPA also estimated the economic impacts of avoided cost to sales which are separate estimates from those of cost savings. The EPA estimated avoided cost-to-sales ratios by comparing the estimated net avoided cost per facility in the first and second years to industry average revenues per establishment. The EPA also estimated net cost-to-sales ratios by comparing net avoided costs to revenues of establishments at different employment size categories. Small business impacts were estimated by computing avoided cost-to-sales ratios for small entities using establishment (facility)-level data given its availability.

6.1 Method for Analyzing Avoided Economic and Small Entity Impacts

The EPA used avoided cost-to-sales comparisons to evaluate the potential impacts to sources affected by this proposed rule. Because this regulatory action will provide regulatory relief, these avoided cost-to-sales ratios represent the potential economic impacts that may be avoided for facilities as a result of this proposed rule. For all regulatory actions, the EPA must determine whether a rule will have a significant economic impact on a substantial number of small entities. This proposed rule will provide regulatory relief to affected sources and has positive and small negative impacts on small entities depending on the NAICS code. Because this proposed rule is expected to yield no adverse economic impacts to small entities except for small entities under NAICS code 326150 (Urethane and Other Foam Product [except Polystyrene] Manufacturing) in alternative scenario 1 in year 1, and no adverse economic impacts to any small entities in year 2, the EPA is not required to provide a small entity analysis. However, the EPA has the discretion to do so. The approach for estimating the avoided economic impacts and the small entity analysis is the same for this analysis. The steps followed include gathering data to characterize the affected establishments by employment size categories,

selecting and describing the measures used in the analysis, and determining cost-to-sales ratios for the affected sector categories.

6.1.1 Identifying Affected Sectors and Entities

The industrial, commercial, and other sectors covered by the proposed rule were identified during the development of the cost analysis for the rule. For these sectors, the affected sources are summarized with applicable six-digit NAICS codes in Tables 6-1 through 6-3.

6.1.2 Data Used to Characterize Affected Entities by Size

The Census Bureau's 2012 Economic Census data provide national information on the distribution of economic variables by industry and size.³¹ Specifically, the tables report data for each industry on the number of establishments (Table 6-1), employment (Table 6-2), and receipts (Table 6-3) by enterprise size category in affected sectors. The 2012 Economic Census definitions in these data elements are as follows:

- *Establishment*: An establishment is a single physical location where business is conducted and/or services are provided.
- *Employment*: Employment includes all employees at the establishment who worked or received pay for the part of the pay period including the 12th of the specified months (March, June, September, and December). Included are employees on paid sick leave, paid holidays, and paid vacations; not included are proprietors and partners of unincorporated businesses.
- Receipts (varies by NAICS code):
 - *Revenue*: This includes revenue from all business activities whether or not payment was received in the census year (excluding sales and other taxes collected from customers and paid directly to a local, state, or federal agency). (NAICS 22, NAICS 48–49)
 - *Revenue*: This includes revenue from all business activities whether or not payment was received in the census year, including commissions and fees from

³¹ The 2012 Economic Census is the most recent version that is publicly available. The first data release of the 2017 Economic Census will be in September 2019. See <https://www.census.gov/programs-surveys/economic-census.html> for more details.

all sources, rents, net investment income, interest, dividends, and royalties. Revenue from leasing property marketed under operating leases is included. It also includes the total value of service contracts, amounts received for work subcontracted to others, and rents from real property sublet to others. It does not include sales and other taxes collected from customers and paid directly by the firm to a local, state, or federal tax agency. (NAICS 53)

- *Total value of shipments and receipts for services:* This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts. (NAICS 21, NAICS 31–33)
- *Receipts:* This includes gross receipts from customers or clients for services provided, from the use of facilities, and from merchandise sold in the census year, whether or not payment was received in the census year and are net after deductions for refunds and allowances for merchandise returned by customers. It excludes sales and other taxes collected directly from customers and paid directly to a local, state, or federal tax agency. (NAICS 56)
- *Receipts/revenue:* This includes gross receipts/revenue from customers or clients for services provided, from the use of facilities, and from merchandise sold in the census year, whether or not payment was received in the census year. Includes amounts received from the rental and leasing of vehicles, equipment, instruments, and tools; the total value of service contracts; market value of compensation received in lieu of cash; amounts received for work subcontracted to others; and dues and assessments from members and affiliates. Receipts/revenue from services performed for foreign parent firms, subsidiaries, and branches included. (NAICS 54, NAICS 71, NAICS 81)
- *Sales:* This includes merchandise sold for cash or credit by establishments primarily engaged in wholesale trade. Net after reductions for refunds and allowances for merchandise returned by customers. Do not include carrying or other credit charges; sales and other taxes collected from customers and forwarded to taxing authorities; and nonoperating income from such sources as investments, rental or sales of real estate, and interest. (NAICS 41)

- *Enterprise*: An enterprise is a business organization consisting of one or more domestic establishments that were specified under common ownership or control. The enterprise and the establishment are the same for single-establishment firms. Each multi-establishment company forms one enterprise—the enterprise employment and annual payroll are summed from the associated establishments. Enterprise size designations are determined by the summed employment of all associated establishments.

The Small Business Administration (SBA) small business size standard(s) is provided for each industry group to facilitate comparisons. Our analysis is focused on the establishment level instead of the firm level because the 2012 Economic Census did not sufficiently report the relevant data for firm employment size categories. Most but not all establishment employment size categories were available for number of establishments, employment and receipts. The receipt data are reported in 2012 dollars. Therefore, to adjust receipt data for comparison to costs estimated in 2014 dollars, the EPA used the St. Louis Federal Reserve's Gross Domestic Product Implicit Price Deflator to adjust 2012 dollars to 2014 dollars.

All receipt and other industry data used in the economic impact analysis can be found in ProposalMM2ARIAdataspreadsheetMay_2019.xls, a spreadsheet that is available in the docket for this rulemaking.

Table 6-1 Number of Establishments by Industry and Enterprise Size: 2012

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	\$27.5 million	1,062	696	283	78	1		
Energy	Crude Petroleum and Natural Gas Extraction	211111	1,250 (Feb 2016 Size Standards)	6,398	5,306	815	234	25	15	3
Energy	Natural Gas Liquid Extraction	211112	750 (Feb 2016 Size Standards)	337	104	110	28	5		
Industrial	Iron Ore Mining	212210	750	21	5	3	3	4		
Industrial	Lead Ore and Zinc Ore Mining	212231	750 (Feb 2016 Size Standards)	16	3		5			
Industrial	Copper Ore and Nickel Ore Mining	212234	1,500 (Feb 2016 Size Standards)	39	8	5	11	7		3
Industrial	All Other Metal Ore Mining	212299	750	26	9		7			
Industrial	Industrial Sand Mining	212322	500	140	44	62	5			
Industrial	Kaolin and Ball Clay Mining	212324	750	30	3	15	6			
Industrial	Potash, Soda, and Borate Mineral Mining	212391	750	25	5			5		
Industrial	All Other Nonmetallic Mineral Mining	212399	500	171	60	43				
Energy	Support Activities for Oil and Gas Operations	213112	\$38.5 million	9,659	2,895	2,213	573	47	15	4
Utilities	Hydroelectric Power Generation	221111	500	405	342	48	0			
Utilities	Fossil Fuel Electric Power Generation	221112	750	1,416	674	466	227			
Utilities	Biomass Electric Power Generation	221117	250	107	69	29	0			
Utilities	Other Electric Power Generation	221118	250	18	14	4	0			
Utilities	Other Electric Power Generation^	221119	4 million MWH (2007 Size Standards)	716						
Utilities	Electric Power Distribution	221122	1,000	7,402	4,157	2,420	616			
Utilities	Natural Gas Distribution	221210	1,000	2,419	1,564	589	188			
Utilities	Water Supply and Irrigation Systems	221310	\$27.5 million	4,039	3,496	292	43			
Utilities	Sewage Treatment Facilities	221320	\$20.5 million	712	597	74	3			
Utilities	Steam and Air-Conditioning Supply	221330	\$15 million	95	50	42	0			

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Industrial	Other Animal Food Manufacturing	311119	500	1,391	921	446	23	1		
Industrial	Wet Corn Milling	311221	1,250	64	24	23	15	2		
Industrial	Soybean Processing^	311222	500 (2007 Size Standards)	108						
Industrial	Other Oilseed Processing^	311223	1,000 (2007 Size Standards)	42						
Industrial	Soybean and Other Oilseed Processing	311224	1,000	150	55	74	21			
Industrial	Fats and Oils Refining and Blending	311225	1,000	126	55	37	34			
Industrial	Beet Sugar Manufacturing	311313	750	31	1	10	16	4		
Industrial	Cane Sugar Manufacturing	311314	1,000	47	14	12	19	2		
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	1,000	220	59	63	82	15	1	
Industrial	Fruit and Vegetable Canning	311421	1,000	690	380	161	134	14	1	
Industrial	Specialty Canning	311422	1,250	112	65	20	19	7	1	
Industrial	Cheese Manufacturing	311513	1,250	541	251	156	121	10	3	
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	750	194	64	82	45	3		
Industrial	Rendering and Meat Byproduct Processing	311613	750	213	89	97	27			
Industrial	Commercial Bakeries	311812	1,000	2,672	1,819	517	316	19		1
Industrial	Other Snack Food Manufacturing	311919	1,250	374	203	89	76	5	1	
Industrial	Coffee and Tea Manufacturing	311920	750	449	338	72	36	2	1	
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1,000	146	81	42	23			
Industrial	Spice and Extract Manufacturing	311942	500	373	219	104	47	3		
Industrial	All Other Miscellaneous Food Manufacturing	311999	500	604	401	147	48	7	1	
Industrial	Breweries	312120	1,250	874	707	120	28	18	1	
Industrial	Distilleries	312140	1,000	251	200	29	22			
Industrial	Tobacco Manufacturing	312230	1,500	114	53	30	25	3	3	
Industrial	Yarn Spinning Mills^	313111	500 (2007 Size Standards)	188						
Industrial	Thread Mills^	313113	500 (2007 Size Standards)	46						
Industrial	Broadwoven Fabric Mills	313210	1,000	328	214	57	51	5	1	

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Industrial	Narrow Fabric Mills^	313221	500 (2007 Size Standards)	148						
Industrial	Textile and Fabric Finishing Mills	313310	1,000	869	652	162	53	2		
Industrial	Broadwoven Fabric Finishing Mills^	313311	1,000 (2007 Size Standards)	509						
Industrial	Fabric Coating Mills	313320	1,000	183	100	67	16			
Industrial	Tire Cord and Tire Fabric Mills^	314992	1,000 (2007 Size Standards)	10						
Industrial	Leather and Hide Tanning and Finishing	316110	500	198	158	29	11			
Industrial	Sawmills	321113	500	2,928	2,154	606	168			
Industrial	Wood Preservation	321114	500	421	295	117	9			
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	500	240	126	71	43			
Industrial	Softwood Veneer and Plywood Manufacturing	321212	1,250	100	32	28	35	5		
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	750	107	69	33	5			
Industrial	Reconstituted Wood Product Manufacturing	321219	750	218	82	77	59			
Industrial	Wood Window and Door Manufacturing	321911	1,000	1,139	768	267	95	4	5	
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	500	989	637	307	44	1		
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	500	1,752	1,404	323	25			
Industrial	Pulp Mills	322110	750	32	4	6	18	4		
Industrial	Paper (except Newsprint) Mills	322121	1,250	166	14	35	73	33	11	
Industrial	Newsprint Mills	322122	750	17	1	3	12	1		
Industrial	Paperboard Mills	322130	1,250	156	9	54	76	16	1	
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	1,250	1,264	450	503	311			
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	750	816	378	280	152	5	1	
Industrial	Coated and Laminated Paper Manufacturing^	322222	500 (2007 Size Standards)	463						

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Industrial	Sanitary Paper Product Manufacturing	322291	1,500	142	47	43	42	9	1	
Industrial	All Other Converted Paper Product Manufacturing	322299	500	521	296	184	40	1		
Industrial	Commercial Lithographic Printing^	323110	500 (2007 Size Standards)	10,464						
Industrial	Commercial Printing (except Screen and Books)	323111	500	20,847	17,281	2,865	660	37	4	
Industrial	Books Printing	323117	1,250	476	330	79	59	6	2	
Industrial	Petroleum Refineries	324110	1,500	158	23	18	68	37	12	
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	750	223	114	83	26			
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	500	110	70	30	10			
Industrial	Petrochemical Manufacturing	325110	1,000	55	16	15	20	4		
Industrial	Industrial Gas Manufacturing	325120	1,000	451	315	126	9	1		
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1,000	158	83	48	25	2		
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	1000 (2007 Size Standards)	80						
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	750 (2007 Size Standards)	78						
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	1,000	645	336	220	78	7	4	
Industrial	Alkalies and Chlorine Manufacturing^	325181	1,000 (2007 Size Standards)	53						
Industrial	Carbon Black Manufacturing^	325182	500 (2007 Size Standards)	28						
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	1,000 (2007 Size Standards)	564						
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	750 (2007 Size Standards)	28						
Industrial	Ethyl Alcohol Manufacturing	325193	1,000	222	43	169	10			
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	1,250	86	42	25	18	1		

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Industrial	All Other Basic Organic Chemical Manufacturing	325199	1,250	865	440	282	119	20	3	1
Industrial	Plastics Material and Resin Manufacturing	325211	1,250	1,144	498	511	123	5	6	1
Industrial	Synthetic Rubber Manufacturing	325212	1,000	147	75	54	18			
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	1,000	124	49	33	37	4	1	
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1,000 (2007 Size Standards)	11						
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	1,000 (2007 Size Standards)	113						
Industrial	Nitrogenous Fertilizer Manufacturing	325311	1,000	189	123	50	16			
Industrial	Phosphatic Fertilizer Manufacturing	325312	750	78	45	18	12	2	1	
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	1,000	210	126	50	31	2	1	
Industrial	Medicinal and Botanical Manufacturing	325411	1,000	427	245	110	61	8	3	
Industrial	Pharmaceutical Preparation Manufacturing	325412	1,250	1,165	623	295	194	35	12	6
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1,250	321	150	97	52	15	6	1
Industrial	Paint and Coating Manufacturing	325510	1,000	1,162	762	312	84	4		
Industrial	Adhesive Manufacturing	325520	500	543	292	202	49			
Industrial	Surface Active Agent Manufacturing	325613	750	145	81	50	13	1		
Industrial	Toilet Preparation Manufacturing	325620	1,250	907	597	189	103	15	3	
Industrial	Explosives Manufacturing	325920	750	77	36	21	19	1		
Industrial	Custom Compounding of Purchased Resins	325991	500	452	243	171	37	1		
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	1,500	320	253	43	20	1	2	1
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	500	1,163	803	275	80	5		

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	1,000	401	118	184	93	5	1	
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	750	590	268	203	113	5	1	
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	500	406	208	136	61	1		
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	750	474	192	240	42			
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	500	240	147	64	25	4		
Industrial	Polystyrene Foam Product Manufacturing	326140	1,000	429	184	183	57	4	1	
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	750	650	274	299	76	1		
Industrial	Plastics Plumbing Fixture Manufacturing	326191	750	394	243	115	36			
Industrial	All Other Plastics Product Manufacturing	326199	750	6,464	3,522	1,995	898	40	9	
Industrial	Tire Manufacturing (except Retreading)	326211	1,500	111	44	22	18	10	16	1
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	750	256	123	78	51	4		
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	750	455	215	152	83	5		
Industrial	All Other Rubber Product Manufacturing	326299	500	701	379	243	76	2	1	
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	1,000	669	558	82	26	2	1	
Industrial	Clay Building Material and Refractories Manufacturing	327120	750	574	278	250	46			
Industrial	Clay Refractory Manufacturing [^]	327124	500 (2007 Size Standards)	138						
Industrial	Flat Glass Manufacturing	327211	1,000	62	14	15	32	1		

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	1,250	440	350	55	29	4	2	
Industrial	Cement Manufacturing	327310	1,000	241	134	50	57			
Industrial	Lime Manufacturing	327410	750	94	43	36	14	1		
Industrial	Gypsum Product Manufacturing	327420	1,500	216	124	70	22			
Industrial	Abrasive Product Manufacturing	327910	750	303	177	103	20	3		
Industrial	Mineral Wool Manufacturing	327993	1,500	271	163	68	38	2		
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	500	458	295	144	19			
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	1,500	406	75	161	123	26	17	4
Industrial	Iron and Steel Mills^	331111	1,000 (2007 Size Standards)	380						
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	750 (2007 Size Standards)	26						
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	1,000	206	37	90	70	6	3	
Industrial	Rolled Steel Shape Manufacturing	331221	1,000	180	99	63	17	1		
Industrial	Primary Aluminum Production^	331312	1,000 (2007 Size Standards)	26						
Industrial	Alumina Refining and Primary Aluminum Production	331313	1,000	45	12	17	9	7		
Industrial	Secondary Smelting and Alloying of Aluminum	331314	750	115	40	61	14			
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	1,250	104	52	18	22	10	2	
Industrial	Aluminum Extruded Product Manufacturing^	331316	750 (2007 Size Standards)	212						
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	750	275	100	85	86	4		
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1,000	207	130	48	24	5		
Industrial	Primary Smelting and Refining of Copper^	331411	1,000 (2007 Size Standards)	12						

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	750 (2007 Size Standards)	195						
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	1,000	252	86	103	59	3	1	
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1,000 (2007 Size Standards)	129						
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	750	310	183	85	35	6		
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	750	260	146	86	27	1		
Industrial	Iron Foundries	331511	1,000	401	152	137	101	10	1	
Industrial	Steel Foundries (except Investment)	331513	500	208	97	65	41	4	1	
Industrial	Aluminum Die-Casting Foundries^	331521	500 (2007 Size Standards)	299						
Industrial	Aluminum Foundries (except Die-Casting)	331524	500	424	259	121	44			
Industrial	Nonferrous Forging	332112	750	61	24	18	15	4		
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	500	1,501	823	557	117	4		
Industrial	Hand and Edge Tool Manufacturing^	332212	500 (2007 Size Standards)	900						
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	750	643	420	160	62	1		
Industrial	Fabricated Structural Metal Manufacturing	332312	500	3,081	1,997	909	170	3	2	
Industrial	Metal Window and Door Manufacturing	332321	750	1,081	665	301	104	9	2	
Industrial	Sheet Metal Work Manufacturing	332322	500	4,120	2,797	1,139	181	2	1	
Industrial	Metal Can Manufacturing	332431	1,500	173	39	50	84			

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Industrial	Other Metal Container Manufacturing	332439	500	342	204	112	23	3		
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	500	826	462	264	96	4		
Industrial	Metal Heat Treating	332811	750	815	480	304	30	1		
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	500	2,527	1,814	643	70			
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	500	2,429	1,687	656	84	2		
Industrial	Other Fabricated Metal Manufacturing	332990	NA							
Industrial	Small Arms Ammunition Manufacturing	332992	1,250	111	87	12	6	2	3	1
Industrial	Ammunition (except Small Arms) Manufacturing	332993	1,500	55	28	7	15	4		1
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	750	3,737	2,864	738	131	4		
Industrial	Farm Machinery and Equipment Manufacturing	333111	1,250	1,124	724	283	94	14	7	2
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1,500	155	103	27	14	8	3	
Industrial	Construction Machinery Manufacturing	333120	1,250	781	412	259	84	15	10	1
Industrial	Mining Machinery and Equipment Manufacturing	333131	500	298	155	104	36	1	2	
Industrial	Printing Machinery and Equipment Manufacturing [^]	333293	500 (2007 Size Standards)	350						
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1,000	225	168	48	9			

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1,250	886	438	236	177	22	13	
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	500 (2007 Size Standards)	331						
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	500 (2007 Size Standards)	162						
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1,500	183	29	80	54	12	6	2
Industrial	Other Engine Equipment Manufacturing	333618	1,500	331	168	74	68	15	6	
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1,250	291	167	86	34	2	2	
Industrial	Welding and Soldering Equipment Manufacturing	333992	1,250	342	237	78	23		4	
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1,250	841	530	205	84	9	7	6
Industrial	Electron Tube Manufacturing^	334411	750 (2007 Size Standards)	83						
Industrial	Bare Printed Circuit Board Manufacturing	334412	750	562	320	177	62	3		
Industrial	Semiconductor and Related Device Manufacturing	334413	1,250	862	562	155	97	29	13	6
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	500	295	197	73	21	3	1	
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	1,000	76	64	11		1		
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1,250	67	28	17	20	2		
Industrial	Household Laundry Equipment Manufacturing	335224	1,250	4		1		1	1	1

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Industrial	Other Major Household Appliance Manufacturing	335228	1,000	25	9	6	1	7	2	
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	750	259	137	74	43	4	1	
Industrial	Motor and Generator Manufacturing	335312	1,250	469	258	129	74	6	2	
Industrial	Storage Battery Manufacturing	335911	1,250	133	52	27	50	3		1
Industrial	Current-Carrying Wiring Device Manufacturing	335931	500	418	203	141	68	5	1	
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1,000	167	78	44	42	1	2	
Industrial	Carbon and Graphite Product Manufacturing	335991	750	155	78	46	30	1		
Industrial	Automobile Manufacturing	336111	1,500	185	135	18	7	2	11	12
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	1,500	78	45	9	3	3	7	11
Industrial	Heavy Duty Truck Manufacturing	336120	1,500	84	36	14	17	7	9	1
Industrial	Motor Vehicle Body Manufacturing	336211	1,000	754	406	245	91	11	1	
Industrial	Truck Trailer Manufacturing	336212	1,000	419	223	130	56	8	2	
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	1,000	845	619	112	88	23	3	
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	500 (2007 Size Standards)	107						
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	750 (2007 Size Standards)	738						
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	1,000	249	128	46	62	10	2	1
Industrial	Motor Vehicle Brake System Manufacturing	336340	1,250	194	84	42	60	6	2	
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	1,500	510	263	112	110	14	10	1
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1,500	403	179	89	111	22	2	

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Industrial	Motor Vehicle Metal Stamping	336370	1,000	775	249	304	189	25	8	
Industrial	Other Motor Vehicle Parts Manufacturing	336390	1,000	1,521	884	325	262	42	8	
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	750 (2007 Size Standards)	1,448						
Industrial	Aircraft Manufacturing	336411	1,500	288	155	52	46	10	9	16
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	1,500	468	204	120	121	13	6	4
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	1,250	886	505	199	144	25	7	6
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1,250	28	4	5	10	4	5	
Industrial	Railroad Rolling Stock Manufacturing	336510	1,500	237	100	81	43	10	2	1
Industrial	Ship Building and Repairing	336611	1,250	697	414	172	82	17	5	7
Industrial	Boat Building	336612	1,000	884	655	152	72	4	1	
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	1,500	43	7	15	14	5	2	
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	750	6,839	6,211	516	98	12	2	
Industrial	Upholstered Household Furniture Manufacturing	337121	1,000	1,229	925	195	83	20	5	1
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	750	2,425	2,184	186	50	3	2	
Industrial	Institutional Furniture Manufacturing	337127	500	718	423	221	73	1		
Industrial	Wood Office Furniture Manufacturing	337211	1,000	378	275	68	32	3		
Industrial	Office Furniture (except Wood) Manufacturing	337214	1,000	252	138	62	45	4	2	1
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	500	1,100	744	268	84	4		
Industrial	Blind and Shade Manufacturing	337920	1,000	357	273	58	23	3		

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Industrial	Surgical and Medical Instrument Manufacturing	339112	1,000	1,337	787	296	212	28	13	1
Industrial	Surgical Appliance and Supplies Manufacturing	339113	750	2,079	1,475	406	171	12	12	3
Industrial	Jewelry and Silverware Manufacturing	339910	500	2,050	1,809	203	34	2	2	
Industrial	Sporting and Athletic Goods Manufacturing	339920	750	1,629	1,312	246	64	4	3	
Industrial	Office Supplies (except Paper) Manufacturing	339940	750	521	416	82	22	1		
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	500	567	319	176	66	5	1	
Industrial	Burial Casket Manufacturing	339995	1,000	110	81	21	7	1		
Industrial	All Other Miscellaneous Manufacturing	339999	500	6,292	5,817	419	51	3	2	
Commercial	Grain and Field Bean Merchant Wholesalers	424510	200	4,889	4,036	549				
Commercial	Petroleum Bulk Stations and Terminals	424710	200	4,305	3,231	858				
Commercial	Scheduled Passenger Air Transportation	481111	1,500	2,231	1,022	636				
Commercial	Line-Haul Railroads	482111	1,500							
Energy	Pipeline Transportation of Crude Oil	486110	1,500	658	503	129				
Energy	Pipeline Transportation of Natural Gas	486210	\$27.5 million	2,118	1,717	232				
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1,500	580	496	65				
Commercial	Support Activities for Rail Transportation	488210	\$15 million	1,275	847	308				
Commercial	Marine Cargo Handling	488320	\$38.5 million	460	217	129				
Commercial	General Warehousing and Storage	493110	\$27.5 million	10,243	5,679	2,660				
Commercial	Other Warehousing and Storage	493190	\$27.5 million	2,505	1,764	482				

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Establishments by Employee Size Categories						
				Total	≤19	20~ 99	100~ 499	500~ 999	1000~ 2499	≥2500
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	\$27.5 million	34,551	27,668	1,146				
Commercial	Testing Laboratories	541380	\$15 million	6,613	4,623	1,255				
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology) ^{^^}	541715	1,000							
Commercial	All Other Support Services	561990	\$11 million	12,940	9,657	1,334				
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	\$38.5 million	849	527	203				
Waste Treatment	Solid Waste Landfill	562212	\$38.5 million	1,275	1,004	180				
Waste Treatment	Solid Waste Combustors and Incinerators	562213	\$38.5 million	109	36	56				
Waste Treatment	Remediation Services	562910	\$20.5 million	4,070	2,536	854				
Educational Services	Colleges, Universities, and Professional Schools	611310	\$27.5 million	4,329	1,745	1,011	799	356		
Commercial	Amusement and Theme Parks	713110	\$38.5 million	442	104	58				
Commercial	Linen and Uniform Supply	812330	NA							
Commercial	Industrial Launderers	812332	\$38.5 million	1,310	461	599				

Notes:

Blank cells represent unreported data in the category. NA means it is not a valid 2012 NAICS code thus SBA Size Standards are not available. When sub-categories are aggregated to the reported size categories, we treated unreported data as zero since no establishments were reported in the sub-category. When zero was explicitly reported for a size category, we report zero in the table.

[^] These source categories have a 2007 NAICS description because they are not defined in the 2012 Census. The 2012 Census provides establishment and revenue data for these source categories on 2007 NAICS basis, as a total figure for all establishments and revenues. It does not provide a breakdown by employment size.

The following NAICS report aggregate data for other top employee size categories and thus are not reported in the table: 115114, 221111, 221112, 221117, 221118, 221122, 221210, 221310, 221320, 221330, 424510, 424710, 481111, 486110, 486210, 486910, 488210, 488320, 493110, 493190, 531120, 541380, 561990, 562211, 562212, 562213, 562910, 611310, 713110, and 812332.

For the following NAICS, total establishments include establishments which operated entire year and not operated entire year whereas the breakdown into categories is done for establishments operated entire year: 221111, 221112, 221117, 221118, 221122, 221210, 221310, 221320, 221330, 424510, 424710, 481111, 486110, 486210, 486910, 488210, 488320, 493110, 493190, 531120, 541380, 561990, 562211, 562212, 562213, 562910, 713110, and 812332.

For NAICS 115114, Postharvest Crop Activities, the data is from County Business Patterns. Geography Area Series: County Business Patterns by Employment Size Class more information 2012 Business Patterns.

332990 is not a valid 2012 NAICS code; therefore, no data are available in the 2012 Economic Census. Also, the size standards for this NAICS code are not available in the 2007, 2016, or 2017 SBA Size Standards. There is not even a description of this NAICS code in any of the SBA Size Standards. It could be a 2002 NAICS code. We found its description as a 2002 NAICS Code in the Survey of Current Business: Volume 88, Issues 1–6, January 1, 2008, U.S. Department of Commerce.

482111 NAICS code (line-haul railroad) is excluded from the Economic Census; therefore, no data are available.

541715 is not a valid 2012 NAICS code; therefore, no data are available in the 2012 Economic Census. Four industries in the 2012 NAICS structure have been expanded for 2017.

541712—Research and Development in the Physical, Engineering and Life Sciences (except Biotechnology) has been expanded to include 541713—Research and Development in Nanotechnology 541715—Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology).

For NAICS 611310, Colleges and Universities, the data are from County Business Patterns. Geography Area Series: County Business Patterns by Employment Size Class more information 2012 Business Patterns.

812330 is not a valid 2012 NAICS code; therefore, no data are available in the 2012 Economic Census. This code seems to be not a NAICS code but an IRS Statistics of Income (SOI) Program Industry Code for coding the industrial activities of corporations filing returns (https://www.irs.gov/irm/part1/irm_01-013-007). The SOI codes correspond to NAICS codes such as 812330 corresponds to 812332 Industrial Launderers and 812331 Linen Supply but is a different code.

NAICS 922140 (Correctional Institutions), NAICS 927110 (Space Research and Technology), NAICS 928110 (National Security) are government/public administration NAICS codes not covered by the Census.

NAICS 999999 is an unclassified code and therefore no data are available for it.

Sources: 2012 Economic Census, 2012 County Business Patterns, 2017 SBA Size Standards, SBA February 2016 Size Standards, SBA 2007 Size Standards.

Table 6-2 Number of Employees by Industry and Enterprise Size: 2012

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	\$27.5 million	39,759	4,000	13,387	15,393	500-999		
Energy	Crude Petroleum and Natural Gas Extraction	211111	1,250 (Feb 2016 Size Standards)	161,685	17,387	35,114	50,386	17,240	21,743	10,000-24,999
Energy	Natural Gas Liquid Extraction	211112	750 (Feb 2016 Size Standards)	14,537	1,094	4,989	5,001	3,241		
Industrial	Iron Ore Mining	212210	750	6,021	20-99	79	1,208	2,500-4,999		
Industrial	Lead Ore and Zinc Ore Mining	212231	750 (Feb 2016 Size Standards)	2,218	26		500-999			
Industrial	Copper Ore and Nickel Ore Mining	212234	1,500 (Feb 2016 Size Standards)	12,555	40-198	100-249	3,127	4,806	2,500-4,999	
Industrial	All Other Metal Ore Mining	212299	750	3,824	90		1,902			
Industrial	Industrial Sand Mining	212322	500	4,168	492	2,871	736			
Industrial	Kaolin and Ball Clay Mining	212324	750	2,405	20-99	603	1,048			
Industrial	Potash, Soda, and Borate Mineral Mining	212391	750	5,109	36			3,739		
Industrial	All Other Nonmetallic Mineral Mining	212399	500	2,790	622	1,654				
Energy	Support Activities for Oil and Gas Operations	213112	\$38.5 million	323,523	29,106	96,295	114,543	32,014	22,687	10,000-24,999
Utilities	Hydroelectric Power Generation	221111	500	3,464	1,396	2,051	0			
Utilities	Fossil Fuel Electric Power Generation	221112	750	82,071	4,652	20,767	46,503			
Utilities	Biomass Electric Power Generation	221117	250	1,424	374	1,025	0			
Utilities	Other Electric Power Generation	221118	250	224	43-122	120-348	0			
Utilities	Other Electric Power Generation^	221119	4 million MWH (2007 Size Standards)	9,812						
Utilities	Electric Power Distribution	221122	1,000	362,844	26,966-29,465	109,403	123,223			
Utilities	Natural Gas Distribution	221210	1,000	83,937	9,854	25,647	36,677			
Utilities	Water Supply and Irrigation Systems	221310	\$27.5 million	36,352	15,641-18,140	11,268	6,789-9,288			
Utilities	Sewage Treatment Facilities	221320	\$20.5 million	6,849	3,228-3,477	2,835	500-999			
Utilities	Steam and Air-Conditioning Supply	221330	\$15 million	2,086	399-478	1,599	0			
Industrial	Other Animal Food Manufacturing	311119	500	27,958	6,669-7,168	16,363	3,730	500-999		

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Wet Corn Milling	311221	1,250	6,606	152-380	976	4,323	1,000-2,499		
Industrial	Soybean Processing^	311222	500 (2007 Size Standards)	6,504						
Industrial	Other Oilseed Processing^	311223	1,000 (2007 Size Standards)	1,319						
Industrial	Soybean and Other Oilseed Processing	311224	1,000	7,823	333-482	3,864	3,320-3,819			
Industrial	Fats and Oils Refining and Blending	311225	1,000	9,006	246-404	1,899	6,764			
Industrial	Beet Sugar Manufacturing	311313	750	6,367	0-19	541-690	3,687	2,115		
Industrial	Cane Sugar Manufacturing	311314	1,000	6,683	50-208	719-798	4,622	1,000-2,499		
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	1,000	33,766	335-414	3,269	19,480	9,491	1,000-2,499	
Industrial	Fruit and Vegetable Canning	311421	1,000	48,840	1,542-1,791	8,265	28,767	8,899	1,000-2,499	
Industrial	Specialty Canning	311422	1,250	11,850	139-237	819	4,567	4,915	1,000-2,499	
Industrial	Cheese Manufacturing	311513	1,250	44,374	1,387	8,219	25,325	6,279	3,165	
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	750	15,701	373-601	4,259	9,357	1,000-2,499	404	
Industrial	Rendering and Meat Byproduct Processing	311613	750	9,065	669	4,614	3,782			
Industrial	Commercial Bakeries	311812	1,000	115,634	7,403-8,902	24,584	66,387	12,344		2,500-4,999
Industrial	Other Snack Food Manufacturing	311919	1250	27,297	911-1,160	4,514	16,961	3,855	1,000-2,499	
Industrial	Coffee and Tea Manufacturing	311920	750	15,340	1,180-1,329	3,096	7,292	1,000-2,499	1,000-2,499	
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1,000	7,043	418	1,918	4,707			
Industrial	Spice and Extract Manufacturing	311942	500	16,417	1,200	5,122	8,389	1,706		
Industrial	All Other Miscellaneous Food Manufacturing	311999	500	23,922	1,892-2,391	7,185	9,361	4,371	1,000-2,499	
Industrial	Breweries	312120	1,250	26,336	2,033-2,781	5,583	5,805	11,471	1,000-2,499	
Industrial	Distilleries	312140	1,000	6,989	725-874	962-1,211	5,056			
Industrial	Tobacco Manufacturing	312230	1,500	14,127	60-297	1,416	3,756-5,255	2,164	5,000-9,999	

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Yarn Spinning Mills^	313111	500 (2007 Size Standards)							
Industrial	Thread Mills^	313113	500 (2007 Size Standards)							
Industrial	Broadwoven Fabric Mills	313210	1,000	18,364	919-1,168	2,860	10,248	3,250	1,000-2,499	
Industrial	Narrow Fabric Mills^	313221	500 (2007 Size Standards)	148						
Industrial	Textile and Fabric Finishing Mills	313310	1,000	22,970	2,931-3,430	7,518	10,959	1,000-2,499		
Industrial	Broadwoven Fabric Finishing Mills^	313311	1,000 (2007 Size Standards)	13,442						
Industrial	Fabric Coating Mills	313320	1,000	6,675	577-726	3,393	2,637-2,886			
Industrial	Tire Cord and Tire Fabric Mills^	314992	1,000 (2007 Size Standards)	1,915						
Industrial	Leather and Hide Tanning and Finishing	316110	500	3,510	634-1,032	1,017-1,516	1,565			
Industrial	Sawmills	321113	500	64,743	11,078	27,188	26,478			
Industrial	Wood Preservation	321114	500	8,061	1,544-1,793	4,957	1,409-1,908			
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	500	11,734	829	3,454	7,453			
Industrial	Softwood Veneer and Plywood Manufacturing	321212	1,250	13,739	102-260	1,452	9,167	2,500-4,999		
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	750	2,854	481-709	1,452	869			
Industrial	Reconstituted Wood Product Manufacturing	321219	750	13,531	455	4,060	9,017			
Industrial	Wood Window and Door Manufacturing	321911	1,000	46,713	4,492	11,233	20,163	2,358	8,468	
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	500	24,358	4,183	13,175	6,442-6,941	500-999		
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	500	25,547	7,374	13,143	5,031			
Industrial	Pulp Mills	322110	750	7,728	0-57	200-498	4,673	2,773		
Industrial	Paper (except Newsprint) Mills	322121	1,250	60,217	40-217	2,057	19,290	24,560	14,180	

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Newsprint Mills	322122	750	3,573	0-19	40-198	2,746	500-999		
Industrial	Paperboard Mills	322130	1,250	34,910	20-137	3,444	18,989	11,236	1,000-2,499	
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	1,250	76,372	3,266	28,392	44,714			
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	750	50,481	2,256-2,754	14,037	29,303	3,094	1,000-2,499	
Industrial	Coated and Laminated Paper Manufacturing^	322222	500 (2007 Size Standards)	25,182						
Industrial	Sanitary Paper Product Manufacturing	322291	1,500	18,071	268-426	2,265	8,749	5,679	1,000-2,499	
Industrial	All Other Converted Paper Product Manufacturing	322299	500	16,455	1,486-1,735	7,634	6,614	500-999		
Industrial	Commercial Lithographic Printing^	323110	500 (2007 Size Standards)	215,340						
Industrial	Commercial Printing (except Screen and Books)	323111	500	352,659	77,438	124,583	121,445	10,000-24,999	2,500-4,999	
Industrial	Books Printing	323117	1,250	24,104	1,365-1,614	3,708	12,875	3,810	1,000-2,499	
Industrial	Petroleum Refineries	324110	1,500	62,542	199-278	969	18,775	25,000-49,999	16,392	
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	750	9,094	786-935	4,404	3,816-4,062			
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	500	3,337	174-402	1,372	1,603-1,852			
Industrial	Petrochemical Manufacturing	325110	1,000	8,582	40-217	703	4,894	2,911		
Industrial	Industrial Gas Manufacturing	325120	1,000	9,723	2,169	5,072	1,668-2,167	500-999		
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1,000	9,064	451-679	2,209	5,227	1,000-2,499		
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	1,000 (2007 Size Standards)	5,455						
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	750 (2007 Size Standards)	3,608						
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	1,000	37,114	2,339	10,514	14,238	5,133	4,893	

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories							
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500	
Industrial	Alkalies and Chlorine Manufacturing^	325181	1,000 (2007 Size Standards)	6,879							
Industrial	Carbon Black Manufacturing^	325182	500 (2007 Size Standards)	1,714							
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	1,000 (2007 Size Standards)	28,521							
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	750 (2007 Size Standards)	3,052							
Industrial	Ethyl Alcohol Manufacturing	325193	1,000	10,391	186-414	7,790	2,367				
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	1,250	5,646	196-354	1,265	3,084-3,333	500-999			
Industrial	All Other Basic Organic Chemical Manufacturing	325199	1,250	67,751	2,796-3,794	13,802	23,491	12,301	5,526	5,000-9,999	
Industrial	Plastics Material and Resin Manufacturing	325211	1,250	66,325	3,847-4,096	24,667	23,319	3,477	7,091	2,500-4,999	
Industrial	Synthetic Rubber Manufacturing	325212	1,000	7,115	424	2,506	4,185				
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	1,000	13,664	346-504	1,683	7,779	2,527	1,000-2,499		
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1,000 (2007 Size Standards)	1,455							
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	1,000 (2007 Size Standards)	12,209							
Industrial	Nitrogenous Fertilizer Manufacturing	325311	1,000	5,255	644-793	2,144	2,346-2,595				
Industrial	Phosphatic Fertilizer Manufacturing	325312	750	6,582	248-406	605	3,234	1,000-2,499	1,000-2,499		
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	1,000	11,397	722	2,311	6,011	1,000-2,499	1,000-2,499		
Industrial	Medicinal and Botanical Manufacturing	325411	1,000	27,879	1,238	5,507	10,898	5,116	5,122		
Industrial	Pharmaceutical Preparation Manufacturing	325412	1,250	147,595	3,648	13,401	49,539	23,501	18,103	39,404	
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1,250	40,485	988-1,286	3,915	12,326	10,490	9,201	2,500-4,999	
Industrial	Paint and Coating Manufacturing	325510	1,000	34,148	4,063-4,562	13,530	13,558	2,500-4,999			
Industrial	Adhesive Manufacturing	325520	500	19,503	1,934	9,454	8,116				

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Surface Active Agent Manufacturing	325613	750	5,490	343-571	2,295	2,156-2,405	500-999		
Industrial	Toilet Preparation Manufacturing	325620	1,250	48,520	2,876	9,175	21,673	10,222	4,575	
Industrial	Explosives Manufacturing	325920	750	6,180	265-423	996	4,028	500-999		
Industrial	Custom Compounding of Purchased Resins	325991	500	16,938	1,294-1,543	8,047	7,025	500-999		
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	1,500	13,927	992	2,217	4,524	500-999	1,000-2,499	2,500-4,999
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	500	33,681	4,380	12,039	13,821	3,441		
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	1,000	30,792	970-1,119	9,272	16,430	2,500-4,999	1,000-2,499	
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	750	36,664	1,471-1,720	9,927	21,234	2,714	1,000-2,499	
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	500	19,002	1,191-1,440	6,485	10,691	500-999		
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	750	20,947	1,459	11,652	7,837			
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	500	10,787	755	3,064	4,443	2,526		
Industrial	Polystyrene Foam Product Manufacturing	326140	1,000	24,088	1,246-1,395	7,922	10,445	2,922	1,000-2,499	
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	750	28,498	1,910-2,159	13,735	12,220	500-999		
Industrial	Plastics Plumbing Fixture Manufacturing	326191	750	14,512	1,636	5,416	7,460			
Industrial	All Other Plastics Product Manufacturing	326199	750	328,389	21,785	95,108	173,474	26,783	11,241	
Industrial	Tire Manufacturing (except Retreading)	326211	1,500	43,197	152-380	824-1,073	3,722-5,221	7,608	27,203	2,500-4,999
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	750	18,748	644-1,042	3,863-5,362	11,312	2,626		
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	750	28,414	1,499	7,251	16,746	2,919		

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	All Other Rubber Product Manufacturing	326299	500	30,971	2,443	11,264	14,638	1,000-2,499	1,000-2,499	
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	1,000	13,097	2,156	3,670	4,860	1,000-2,499	1,000-2,499	
Industrial	Clay Building Material and Refractories Manufacturing	327120	750	21,273	1,917	11,486	7,870			
Industrial	Clay Refractory Manufacturing^	327124	500 (2007 Size Standards)	4,389						
Industrial	Flat Glass Manufacturing	327211	1,000	9,022	53-151	500-998	7,650	500-999		
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	1,250	14,856	1,365-1,614	2,691	6,018	2,420	1,000-2,499	
Industrial	Cement Manufacturing	327310	1,000	11,957	671-820	3,230	7,901-8,150			
Industrial	Lime Manufacturing	327410	750	4,363	157-315	1,658	1,899	500-999		
Industrial	Gypsum Product Manufacturing	327420	1,500	7,761	558-707	3,964	3,180-3,429			
Industrial	Abrasive Product Manufacturing	327910	750	12,701	1,216	4,668	4,796	2,022		
Industrial	Mineral Wool Manufacturing	327993	1,500	13,950	1,016-1,265	2,965	8,538			
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	500	10,728	1,922	5,563	3,245			
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	1,500	102,974	620-1,347	7,432-9,931	31,169	18,318	28,579	10,000-24,999
Industrial	Iron and Steel Mills^	331111	1,000 (2007 Size Standards)	99,246						
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	750 (2007 Size Standards)	3,728						
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	1,000	26,400	290-697	4,731	13,514	3,892	3,909	
Industrial	Rolled Steel Shape Manufacturing	331221	1,000	6,780	531-780	2,978	2,516-2,765	500-999		
Industrial	Primary Aluminum Production^	331312	1,000 (2007 Size Standards)	6,874						
Industrial	Alumina Refining and Primary Aluminum Production	331313	1,000	8,818	72-91	792-1,041	2,774	5,103		

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Secondary Smelting and Alloying of Aluminum	331314	750	5,592	214-293	3,162	2,024-2,273			
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	1,250	17,108	137-295	1,132-1,281	4,750	7,788	2,500-4,999	
Industrial	Aluminum Extruded Product Manufacturing^	331316	750 (2007 Size Standards)							
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	750	24,480	545	4,695	16,739	2,501		
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1,000	10,969	668	2,094	4,994	3,215		
Industrial	Primary Smelting and Refining of Copper^	331411	1,000 (2007 Size Standards)	2,143						
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	750 (2007 Size Standards)	8,826						
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	1,000	21,378	457-685	5,465	12,010	2,237	1,000-2,499	
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1,000 (2007 Size Standards)	10,719						
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	750	17,428	854-1,003	4,121	6,853	4,163	1,000-2,499	
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	750	10,958	871-1,020	3,974	5,242	500-999		
Industrial	Iron Foundries	331511	1,000	38,637	921-1,070	7,305	21,878	7,357	1,000-2,499	
Industrial	Steel Foundries (except Investment)	331513	500	17,568	476-774	3,434	9,738	2,675	1,000-2,499	
Industrial	Aluminum Die-Casting Foundries^	331521	500 (2007 Size Standards)	23,319						
Industrial	Aluminum Foundries (except Die-Casting)	331524	500	15,416	1,457	5,616	8,344			
Industrial	Nonferrous Forging	332112	750	6,964	155-313	906	3,014	2,857		
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	500	53,219	5,556	25,435	19,580	2,650		

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Hand and Edge Tool Manufacturing [^]	332212	500 (2007 Size Standards)	23,342						
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	750	21,712	1,969-2,218	7,496	11,412	500-999		
Industrial	Fabricated Structural Metal Manufacturing	332312	500	87,923	12,523	38,851	30,902	1,000-2,499	2,500-4,999	
Industrial	Metal Window and Door Manufacturing	332321	750	45,665	3,504-4,003	13,957	19,812	5,734	1,000-2,499	
Industrial	Sheet Metal Work Manufacturing	332322	500	99,904	19,211	48,064	29,443	1,000-2,499	1,000-2,499	
Industrial	Metal Can Manufacturing	332431	1,500	17,296	170-328	3,078	13,977			
Industrial	Other Metal Container Manufacturing	332439	500	11,789	1,174	5,139	3,790	1,688		
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	500	36,321	3,108	11,929	18,233	3,052		
Industrial	Metal Heat Treating	332811	750	22,199	4,193-4,442	12,182	5,096	500-999		
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	500	49,633	10,485	27,762	11,386			
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	500	52,698	10,394-11,893	27,607	12,700	1,000-2,499		
Industrial	Other Fabricated Metal Manufacturing	332990	NA							
Industrial	Small Arms Ammunition Manufacturing	332992	1,250	10,413	260-339	350-748	1,379-2,878	1,000-2,499	2,500-4,999	2,500-4,999
Industrial	Ammunition (except Small Arms) Manufacturing	332993	1,500	11,003	60-297	120-348	3,469	2,777		2,500-4,999
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	750	70,421	15,423	29,755	22,290	2,954		
Industrial	Farm Machinery and Equipment Manufacturing	333111	1,250	63,643	3,368-5,366	12,232	21,317	9,796	9,256	5,000-9,999
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1,500	15,345	300-747	1,408	3,087	5,355	5,000-9,999	
Industrial	Construction Machinery Manufacturing	333120	1,250	62,302	2,342-2,591	12,265	18,149	9,666	16,753	2,500-4,999

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Mining Machinery and Equipment Manufacturing	333131	500	17,280	1,044-1,193	4,806	8,011	500-999	2,500-4,999	
Industrial	Printing Machinery and Equipment Manufacturing^	333293	500 (2007 Size Standards)	7,866						
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1,000	5,376	704	2,170	2,503			
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1,250	86,110	2,712	11,341	40,169	15,862	16,029	
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	500 (2007 Size Standards)	16,078						
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	500 (2007 Size Standards)	8,607						
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1,500	36,955	140-447	4,163	11,246	7,822	7,825	5,000-9,999
Industrial	Other Engine Equipment Manufacturing	333618	1,500	38,195	1,051	3,513	14,321	10,194	9,117	
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1,250	17,862	1,089	4,121	7,224	1,000-2,499	2,500-4,999	
Industrial	Welding and Soldering Equipment Manufacturing	333992	1,250	14,874	1,189	3,516	3,952		6,218	
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1,250	73,195	2,852	9,519	17,278	5,760	11,163	26,623
Industrial	Electron Tube Manufacturing^	334411	750 (2007 Size Standards)	5,222						
Industrial	Bare Printed Circuit Board Manufacturing	334412	750	24,165	1,829	8,601	11,053	2,683		
Industrial	Semiconductor and Related Device Manufacturing	334413	1,250	102,570	3,174	7,495	22,441	19,559	19,875	30,027
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	500	11,199	970-1,219	3,017	3,410	2,055	1,000-2,499	

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories							
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500	
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	1,000	1,207	153-381	404-553					
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1,250	6,494	140-447	948	4,134	1,000-2,499			
Industrial	Household Laundry Equipment Manufacturing	335224	1,250	5,000-9,999		20-99		500-999	1,000-2,499	2,500-4,999	
Industrial	Other Major Household Appliance Manufacturing	335228	1,000	8,772	20-118	243-392	100-249	5,351	2,500-4,999		
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	750	19,333	522-820	3,696	10,044	2,427	1,000-2,499		
Industrial	Motor and Generator Manufacturing	335312	1,250	31,600	1,499-1,748	6,006	16,514	4,554	2,500-4,999		
Industrial	Storage Battery Manufacturing	335911	1,250	20,383	140-447	1,308	11,011	1,805		5,000-9,999	
Industrial	Current-Carrying Wiring Device Manufacturing	335931	500	25,909	1,244-1,393	6,924	12,856	3,305	1,000-2,499		
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1,000	14,237	453	2,488	8,275	500-999	1,000-2,499		
Industrial	Carbon and Graphite Product Manufacturing	335991	750	8,992	429-508	2,201	5,694	500-999			
Industrial	Automobile Manufacturing	336111	1,500	69,285	521	937	1,061-3,060	1,000-2,499	19,113	46,033	
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	1,500	58,658	125-283	472	328	1,000-2,499	14,317	41,216	
Industrial	Heavy Duty Truck Manufacturing	336120	1,500	29,275	120-367	350-748	3,531	4,406	15,708	2,500-4,999	
Industrial	Motor Vehicle Body Manufacturing	336211	1,000	41,176	2,611-3,110	11,016	18,841	7,406	1,000-2,499		
Industrial	Truck Trailer Manufacturing	336212	1,000	27,670	1,338-1,587	6,166	11,603	5,511	2,500-4,999		
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	1,000	48,566	2,530	4,977	20,618	17,236	3,207		
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	500 (2007 Size Standards)								
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	750 (2007 Size Standards)								

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	1,000	29,282	752	2,154	13,432	6,893	1,000-2,499	2,500-4,999
Industrial	Motor Vehicle Brake System Manufacturing	336340	1,250	23,130	401-550	2,165	13,657	4,048	2,500-4,999	
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	1,500	59,908	1,197-1,446	5,330	24,750	9,868	16,054	2,500-4,999
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1,500	50,452	922-1,071	4,809	27,116	14,670	2,500-4,999	
Industrial	Motor Vehicle Metal Stamping	336370	1,000	83,680	1,970	15,545	39,713	15,601	10,851	
Industrial	Other Motor Vehicle Parts Manufacturing	336390	1,000	120,977	4,873	16,215	60,297	29,019	10,575	
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	750 (2007 Size Standards)							
Industrial	Aircraft Manufacturing	336411	1,500	171,749	910	2,099	10,481	6,565	13,127	138,569
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	1,500	79,125	1,204	5,377	26,809	8,537	8,624	28,575
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	1,250	106,935	3,024	10,114	32,132	16,828	12,271	32,567
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1,250	12,530	5-24	120-348	1,798-2,297	2,165	8,035	
Industrial	Railroad Rolling Stock Manufacturing	336510	1,500	28,372	733	3,624	9,204	6,638	2,500-4,999	2,500-4,999
Industrial	Ship Building and Repairing	336611	1,250	105,192	2,370	8,026	18,580	10,784	7,483	57,949
Industrial	Boat Building	336612	1,000	28,081	2,873-3,372	6,480	15,021	2,365	1,000-2,499	
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	1,500	9,956	20-137	612-861	2,817	3,830	2,500-4,999	
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	750	77,649	24,676-29,675	20,020	20,707	7,864	2,500-4,999	
Industrial	Upholstered Household Furniture Manufacturing	337121	1,000	55,557	4,476-5,975	9,189	17,217	13,803	7,180	2,500-4,999
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	750	31,423	8,834	7,605	9,791	1,000-2,499	2,500-4,999	
Industrial	Institutional Furniture Manufacturing	337127	500	26,119	2,549-2,798	9,874	12,619	500-999		

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Wood Office Furniture Manufacturing	337211	1,000	13,774	1,358-1,607	3,225	6,913	1,000-2,499		
Industrial	Office Furniture (except Wood) Manufacturing	337214	1,000	22,528	513-811	2,611	9,414	3,122	2,500-4,999	2,500-4,999
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	500	33,357	4,006	12,039	14,824	2,490		
Industrial	Blind and Shade Manufacturing	337920	1,000	11,569	1,359	2,526	5,711	1,974		
Industrial	Surgical and Medical Instrument Manufacturing	339112	1,000	105,419	4,053-7,051	14,278	46,482	18,851	18,966	2,500-4,999
Industrial	Surgical Appliance and Supplies Manufacturing	339113	750	99,091	7,089-8,588	18,583	36,930	7,680	17,484	10,000-24,999
Industrial	Jewelry and Silverware Manufacturing	339910	500	26,026	6,835	8,379	6,720	1,000-2,499	2,500-4,999	
Industrial	Sporting and Athletic Goods Manufacturing	339920	750	36,968	5,960	11,001	12,751	2,674	4,582	
Industrial	Office Supplies (except Paper) Manufacturing	339940	750	10,517	1,739-1,988	3,700	4,143	500-999		
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	500	29,140	2,253-2,502	8,355	14,382	2,904	1,000-2,499	
Industrial	Burial Casket Manufacturing	339995	1,000	3,751	467-616	945	1,157-1,656	500-999		
Industrial	All Other Miscellaneous Manufacturing	339999	500	53,872	23,152	15,197	9,848	1,000-2,499	2,500-4,999	
Commercial	Grain and Field Bean Merchant Wholesalers	424510	200	49,603	25,751	18,933				
Commercial	Petroleum Bulk Stations and Terminals	424710	200	73,309	22,824	31,690				
Commercial	Scheduled Passenger Air Transportation	481111	1,500	398,335	7,029-7,528	28,440				
Commercial	Line-Haul Railroads	482111	1,500							
Energy	Pipeline Transportation of Crude Oil	486110	1,500	11,299	3,107	5,050				
Energy	Pipeline Transportation of Natural Gas	486210	\$27.5 million	29,597	10,539	8,368				
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1,500	6,233	2,442-3,589	1,500-3,498				

Sector	Source Category	NAICS	SBA Size Standards (2017)	Number of Employees by Employee Size Categories						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Commercial	Support Activities for Rail Transportation	488210	\$15 million	32,100	5,751	12,738				
Commercial	Marine Cargo Handling	488320	\$38.5 million	53,313	1,414	5,845				
Commercial	General Warehousing and Storage	493110	\$27.5 million	599,384	39,356	117,612				
Commercial	Other Warehousing and Storage	493190	\$27.5 million	66,767	10,255-14,253	15,087-20,086				
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	\$27.5 million	170,381	92,430	40,932				
Commercial	Testing Laboratories	541380	\$15 million	115,018	28,410	50,663				
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	1,000							
Commercial	All Other Support Services	561990	\$11 million	148,019	45,598	53,251				
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	\$38.5 million	27,782	3,566	8,810				
Waste Treatment	Solid Waste Landfill	562212	\$38.5 million	16,209	6,678	6,332				
Waste Treatment	Solid Waste Combustors and Incinerators	562213	\$38.5 million	4,784	243-322	2,816				
Waste Treatment	Remediation Services	562910	\$20.5 million	78,027	17,113	34,649				
Educational Services	Colleges, Universities, and Professional Schools	611310	\$27.5 million	1,805,199	10,711	49,461	194,356	256,266		
Commercial	Amusement and Theme Parks	713110	\$38.5 million	116,148	619	2,777				
Commercial	Linen and Uniform Supply	812330	NA							
Commercial	Industrial Launderers	812332	\$38.5 million	60,452	3,886	28,406				

Notes:

Blank cells represent unreported data in the category. NA means it is not a valid 2012 NAICS code thus an SBA Size Standard is not available. When sub-categories are aggregated to the reported size categories, we treated unreported data as zero since no employment was reported in the sub-category. When zero was explicitly reported for a size category, we report zero in the table.

^ These source categories have a 2007 NAICS description because they are not defined in the 2012 Census. The 2012 Census provides establishment and revenue data for these source categories on 2007 NAICS basis, as a total figure for all establishments and revenues. It does not provide a breakdown by employment size.

The following NAICS report aggregate data for other top employee size categories and thus are not reported in the table: 221111, 221112, 221117, 221118, 221122, 221210, 221310, 221320, 221330, 424510, 424710, 481111, 486110, 486210, 486910, 488210, 488320, 493110, 493190, 531120, 541380, 561990, 562211, 562212, 562213, 562910, 713110, and 812332.

For the following NAICS, total receipts include establishments that operated the entire year and not operated the entire year, whereas the breakdown into categories is done for establishments operated the entire year: 221111, 221112, 221117, 221118, 221122, 221210, 221310, 221320, 221330, 424510, 424710, 481111, 486110, 486210, 486910, 488210, 488320, 493110, 493190, 531120, 541380, 561990, 562211, 562212, 562213, 562910, 713110, and 812332.

For NAICS 115114, Post harvest Crop Activities, the data are from County Business Patterns, but there are no revenue data. Geography Area Series: County Business Patterns by Employment Size Class more information 2012 Business Patterns.

332990 is not a valid 2012 NAICS code; therefore, no data are available in the 2012 Economic Census. Also, the size standards for this NAICS code are not available in the 2007, 2016, or 2017 SBA Size Standards. There is not even a description of this NAICS code in any of the SBA Size Standards. It could be a 2002 NAICS code. We found its description as a 2002 NAICS Code in the Survey of Current Business: Volume 88, Issues 1-6, January 1, 2008, U.S. Department of Commerce.

482111 NAICS code (line-haul railroad) is excluded from the Economic Census; therefore, no data are available.

541715 is not a valid 2012 NAICS code; therefore, no data are available in the 2012 Economic Census. Four industries in the 2012 NAICS structure have been expanded for 2017. 541712—Research and Development in the Physical, Engineering and Life Sciences (except Biotechnology) has been expanded to include 541713 - Research and Development in Nanotechnology 541715—Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology).

812330 is not a valid 2012 NAICS code; therefore, no data are available in the 2012 Economic Census. This code seems to be not a NAICS code but an IRS SOI Program Industry Code for coding the industrial activities of corporations filing returns (https://www.irs.gov/irm/part1/irm_01-013-007). The SOI codes correspond to NAICS codes such as 812330 corresponds to 812332 Industrial Launderers and 812331 Linen Supply but is a different code.

For NAICS 611310, Colleges and Universities establishment and employment data are from County Business Patterns but there are no revenue data. Geography Area Series: County Business Patterns by Employment Size Class more information 2012 Business Patterns.

NAICS 922140 (Correctional Institutions), NAICS 927110 (Space Research and Technology), NAICS 928110 (National Security) are government/public administration NAICS codes not covered by the Census.

NAICS 999999 is an unclassified code and therefore no data are available for it.

Sources: 2012 Economic Census, 2017 SBA Size Standards, SBA February 2016 Size Standards, SBA 2007 Size Standards, Federal Reserve Bank of St. Louis Economic Research.

Table 6-3 Receipts by Industry and Enterprise Size: 2012 (in millions of 2014\$)

Sector	Source Category	NAICS	SBA Size Standards (2017)	Receipts by Employee Size Categories (in millions of 2014\$)						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	\$27.5 million							
Energy	Crude Petroleum and Natural Gas Extraction	211111	1,250 (Feb 2016 Size Standards)	280,462	D	69,931	78,412	56,173	36,035	D
Energy	Natural Gas Liquid Extraction	211112	750 (Feb 2016 Size Standards)	41,179	6,336	17,042	11,203	5,762		
Industrial	Iron Ore Mining	212210	750	4,933	D	44	1,039	D		
Industrial	Lead Ore and Zinc Ore Mining	212231	750 (Feb 2016 Size Standards)	1,739	D					
Industrial	Copper Ore and Nickel Ore Mining	212234	1,500 (Feb 2016 Size Standards)	11,113	D	D	D	3,581	D	
Industrial	All Other Metal Ore Mining	212299	750	1,581	D		727			
Industrial	Industrial Sand Mining	212322	500	1,792	184	1,189	393			
Industrial	Kaolin and Ball Clay Mining	212324	750	882	D	189	470			
Industrial	Potash, Soda, and Borate Mineral Mining	212391	750	3,003	D			2,075		
Industrial	All Other Nonmetallic Mineral Mining	212399	500	728	D	359				
Energy	Support Activities for Oil and Gas Operations	213112	\$38.5 million	87,703	6,180	20,801	27,469	10,707	12,266	D
Utilities	Hydroelectric Power Generation	221111	500	2,537	Q	Q	Q			
Utilities	Fossil Fuel Electric Power Generation	221112	750	84,272	Q	Q	Q			
Utilities	Biomass Electric Power Generation	221117	250	746	Q	Q	Q			
Utilities	Other Electric Power Generation	221118	250	45	Q	Q	Q			
Utilities	Other Electric Power Generation^	221119	4 million MWH (2007 Size Standards)	7,480						
Utilities	Electric Power Distribution	221122	1,000	310,402	Q	Q	Q			
Utilities	Natural Gas Distribution	221210	1,000	92,645	Q	Q	Q			
Utilities	Water Supply and Irrigation Systems	221310	\$27.5 million	9,762	Q	Q	Q			
Utilities	Sewage Treatment Facilities	221320	\$20.5 million	1,424	Q	Q	Q			
Utilities	Steam and Air-Conditioning Supply	221330	\$15 million	1,477	Q	Q	Q			
Industrial	Other Animal Food Manufacturing	311119	500	37,613	D	21,793	D	D		

Sector	Source Category	NAICS	SBA Size Standards (2017)	Receipts by Employee Size Categories (in millions of 2014\$)						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Wet Corn Milling	311221	1,250	13,430	D	1,467	9,518	D		
Industrial	Soybean Processing^	311222	500 (2007 Size Standards)	39,122						
Industrial	Other Oilseed Processing^	311223	1000 (2007 Size Standards)	2,763						
Industrial	Soybean and Other Oilseed Processing	311224	1,000	41,885	D	24,290	D			
Industrial	Fats and Oils Refining and Blending	311225	1,000	17,339	D	5,046	D			
Industrial	Beet Sugar Manufacturing	311313	750	4,815	D	D	D	1,429		
Industrial	Cane Sugar Manufacturing	311314	1,000	6,101	D	D	4,218	D		
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	1,000	12,600	D	D	6,953	D	D	
Industrial	Fruit and Vegetable Canning	311421	1,000	24,336	D	3,695	14,968	D	D	
Industrial	Specialty Canning	311422	1,250	9,826	D	D	D	3,942	D	
Industrial	Cheese Manufacturing	311513	1,250	42,657	1,115	7,086	26,681	4,501	3,273	
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	750	20,204	D	4,475	12,285	D		
Industrial	Rendering and Meat Byproduct Processing	311613	750	5,469	D	2,659	2,239			
Industrial	Commercial Bakeries	311812	1,000	29,078	D	4,792	18,988	2,878		D
Industrial	Other Snack Food Manufacturing	311919	1,250	21,329	D	1,482	17,491	D	D	
Industrial	Coffee and Tea Manufacturing	311920	750	13,646	D	1,744	10,413	D	D	
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1,000	9,052	D	D	7,736			
Industrial	Spice and Extract Manufacturing	311942	500	9,471	D	2,606	4,276	D		
Industrial	All Other Miscellaneous Food Manufacturing	311999	500	11,882	D	3,933	4,659	2,062	D	
Industrial	Breweries	312120	1,250	29,374	D	1,818	D	D	D	
Industrial	Distilleries	312140	1,000	9,948	D	D	D			
Industrial	Tobacco Manufacturing	312230	1,500	41,564	D	D	8,760	1,451	D	
Industrial	Yarn Spinning Mills^	313111	500 (2007 Size Standards)	4,429						
Industrial	Thread Mills^	313113	500 (2007 Size Standards)	295						

Sector	Source Category	NAICS	SBA Size Standards (2017)	Receipts by Employee Size Categories (in millions of 2014\$)						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Thread Mills^	313113	500 (2007 Size Standards)	295						
Industrial	Broadwoven Fabric Mills	313210	1,000	4,483	D	684	2,619	708	D	
Industrial	Narrow Fabric Mills^	313221	500 (2007 Size Standards)	970						
Industrial	Textile and Fabric Finishing Mills	313310	1,000	5,369	D	1,937	2,577	D		
Industrial	Broadwoven Fabric Finishing Mills^	313311	1,000 (2007 Size Standards)	3,496						
Industrial	Fabric Coating Mills	313320	1,000	2,388	D	1,225	D			
Industrial	Tire Cord and Tire Fabric Mills^	314992	1,000 (2007 Size Standards)	840						
Industrial	Leather and Hide Tanning and Finishing	316110	500	1,590	D	821	644			
Industrial	Sawmills	321113	500	19,431	2,903	7,836	8,692			
Industrial	Wood Preservation	321114	500	4,432	D	2,931	D			
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	500	2,620	D	D	1,846			
Industrial	Softwood Veneer and Plywood Manufacturing	321212	1,250	4,366	D	D	2,817	901		
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	750	933	D	D	330			
Industrial	Reconstituted Wood Product Manufacturing	321219	750	6,584	D	D	4,974			
Industrial	Wood Window and Door Manufacturing	321911	1,000	9,513	D	D	4,510	D	D	
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	500	6,184	950	3,455	D			
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	500	5,245	1,233	2,941	1,070			
Industrial	Pulp Mills	322110	750	6,191	D	D	3,683	2,342		
Industrial	Paper (except Newsprint) Mills	322121	1,250	45,539	D	D	14,649	17,490	12,111	
Industrial	Newsprint Mills	322122	750	2,813	D	D	D			
Industrial	Paperboard Mills	322130	1,250	29,418	D	D	17,142	9,180	D	
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	1,250	34,758	1,481	12,423	20,855			

Sector	Source Category	NAICS	SBA Size Standards (2017)	Receipts by Employee Size Categories (in millions of 2014\$)					
				Total	≤19	20~99	100~499	500~999	1000~2499
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	750	22,037	D	5,578	12,019	2,285	D
Industrial	Coated and Laminated Paper Manufacturing^	322222	500 (2007 Size Standards)	13,257					
Industrial	Sanitary Paper Product Manufacturing	322291	1,500	12,594	D	D	5,877	5,108	D
Industrial	All Other Converted Paper Product Manufacturing	322299	500	5,386	D	2,733	D	D	
Industrial	Commercial Lithographic Printing^	323110	500 (2007 Size Standards)	40,941					
Industrial	Commercial Printing (except Screen and Books)	323111	500	69,816	D	23,430	28,318	6,108	D
Industrial	Books Printing	323117	1,250	4,380	D	D	2,554	588	D
Industrial	Petroleum Refineries	324110	1,500	829,448	D	4,676	222,338	D	230,045
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	750	11,130	D	5,000	D		
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	500	5,506	D	2,487	D		
Industrial	Petrochemical Manufacturing	325110	1,000	85,200	D	D	39,109	D	
Industrial	Industrial Gas Manufacturing	325120	1,000	7,624	2,132	2,994	D	D	
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1,000	9,411	D	1,548	4,477	D	
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	1,000 (2007 Size Standards)	7,017					
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	750 (2007 Size Standards)	2,394					
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	1,000	35,846	D	11,165	14,235	2,899	D
Industrial	Alkalies and Chlorine Manufacturing^	325181	1,000 (2007 Size Standards)	8,365					
Industrial	Carbon Black Manufacturing^	325182	500 (2007 Size Standards)	2,440					
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	1,000 (2007 Size Standards)	25,041					

Sector	Source Category	NAICS	SBA Size Standards (2017)	Receipts by Employee Size Categories (in millions of 2014\$)						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	750 (2007 Size Standards)	7,391						
Industrial	Ethyl Alcohol Manufacturing	325193	1,000	44,114	D	31,293	11,501			
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	1,250	9,809	D	1,090	5,667	D		
Industrial	All Other Basic Organic Chemical Manufacturing	325199	1,250	93,450	D	16,981	36,261	29,373	3,631	D
Industrial	Plastics Material and Resin Manufacturing	325211	1,250	94,666	D	22,102	42,118	6,591	15,208	D
Industrial	Synthetic Rubber Manufacturing	325212	1,000	9,681	D	2,833	D	281		
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	1,000	8,926	D	756	5,317	2,189	D	
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1,000 (2007 Size Standards)	1,780						
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	1,000 (2007 Size Standards)	7,146						
Industrial	Nitrogenous Fertilizer Manufacturing	325311	1,000	9,819	D	2,763	D			
Industrial	Phosphatic Fertilizer Manufacturing	325312	750	12,045	D	D	D		D	
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	1,000	15,697	D	2,970	8,418	D	D	
Industrial	Medicinal and Botanical Manufacturing	325411	1,000	13,016	D	1,896	5,609	4,051	D	
Industrial	Pharmaceutical Preparation Manufacturing	325412	1,250	141,140	D	D	63,793	19,822	16,716	D
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1,250	28,023	D	D	7,420	8,851	7,540	D
Industrial	Paint and Coating Manufacturing	325510	1,000	24,900	D	9,361	11,356	D		
Industrial	Adhesive Manufacturing	325520	500	12,524	1,220	6,359	4,945			
Industrial	Surface Active Agent Manufacturing	325613	750	12,099	D	2,883	D			
Industrial	Toilet Preparation Manufacturing	325620	1,250	41,863	991	4,131	18,470	15,887	2,384	
Industrial	Explosives Manufacturing	325920	750	2,206	D	D	D			
Industrial	Custom Compounding of Purchased Resins	325991	500	10,673	D	4,771	4,667	D		
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	1,500	9,032	D	879	3,269	D	D	D
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	500	20,945	2,503	8,087	9,015	1,339		
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	1,000	13,210	369	3,800	7,344	D	D	

Sector	Source Category	NAICS	SBA Size Standards (2017)	Receipts by Employee Size Categories (in millions of 2014\$)						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	750	18,181	D	4,366	10,693	1,468	D	
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	500	6,362	D	1,621	3,487	D		
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	750	9,513	836	5,934	2,743			
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	500	3,649	D	1,023	D			
Industrial	Polystyrene Foam Product Manufacturing	326140	1,000	8,946	D	2,929	3,900	1,181	D	
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	750	9,851	D	5,414	3,474	D		
Industrial	Plastics Plumbing Fixture Manufacturing	326191	750	3,064	D	1,100	D	D		
Industrial	All Other Plastics Product Manufacturing	326199	750	83,830	5,267	22,620	45,301	7,963	2,679	
Industrial	Tire Manufacturing (except Retreading)	326211	1,500	20,936	D	D	2,645	4,973	11,454	D
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	750	5,423	D	D	3,475	588		
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	750	7,739	D	D	4,576	1,369		
Industrial	All Other Rubber Product Manufacturing	326299	500	11,381	750	3,509	5,029	D	D	
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	1,000	2,228	D	560	1,018	D	D	
Industrial	Clay Building Material and Refractories Manufacturing	327120	750	5,313	448	2,573	2,291			
Industrial	Clay Refractory Manufacturing [^]	327124	500 (2007 Size Standards)	1,294						
Industrial	Flat Glass Manufacturing	327211	1,000	3,273	D	D	D	D		
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	1,250	3,796	D	D	D	581	D	
Industrial	Cement Manufacturing	327310	1,000	6,097	D	D	D			
Industrial	Lime Manufacturing	327410	750	2,436	D	D	D			
Industrial	Gypsum Product Manufacturing	327420	1,500	3,811	D	2,142	D			
Industrial	Abrasive Product Manufacturing	327910	750	5,580	397	1,609	2,077	1,498		
Industrial	Mineral Wool Manufacturing	327993	1,500	5,030	D	934	3,372	D		
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	500	4,274	D	2,257	D			

Sector	Source Category	NAICS	SBA Size Standards (2017)	Receipts by Employee Size Categories (in millions of 2014\$)						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	1,500	116,462	D	D	36,412	26,639	28,614	D
Industrial	Iron and Steel Mills^	331111	1,000 (2007 Size Standards)	113,769						
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	750 (2007 Size Standards)	2,692						
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	1,000	15,211	183	2,598	7,407	2,499	2,524	
Industrial	Rolled Steel Shape Manufacturing	331221	1,000	5,775	D	2,214	D	D		
Industrial	Primary Aluminum Production^	331312	1,000 (2007 Size Standards)	5,240						
Industrial	Alumina Refining and Primary Aluminum Production	331313	1,000	6,718	D	757	2,126	3,808		
Industrial	Secondary Smelting and Alloying of Aluminum	331314	750	5,991	D	3,081	D			
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	1,250	16,610	D	D	3,991	9,101	D	
Industrial	Aluminum Extruded Product Manufacturing^	331316	750 (2007 Size Standards)	8,260						
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	750	9,627	D	D	6,633	D		
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1,000	15,842	D	3,247	D	2,978		
Industrial	Primary Smelting and Refining of Copper^	331411	1,000 (2007 Size Standards)	6,358						
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	750 (2007 Size Standards)	9,483						
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	1,000	24,149	D	7,607	13,683	1,783	D	
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1,000 (2007 Size Standards)	7,713						
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	750	8,092	D	1,867	3,173	D	D	
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	750	15,516	D	4,512	9,646	D		
Industrial	Iron Foundries	331511	1,000	11,314	D	D	6,164	3,025	D	

Sector	Source Category	NAICS	SBA Size Standards (2017)	Receipts by Employee Size Categories (in millions of 2014\$)						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Steel Foundries (except Investment)	331513	500	4,610	D	759	2,689	801	D	
Industrial	Aluminum Die-Casting Foundries^	331521	500 (2007 Size Standards)	5,958						
Industrial	Aluminum Foundries (except Die-Casting)	331524	500	2,933	D	882	1,833			
Industrial	Nonferrous Forging	332112	750	3,089	D	D	1,144	1,601	D	
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	500	12,259	1,115	5,500	4,954	690	271	
Industrial	Hand and Edge Tool Manufacturing^	332212	500 (2007 Size Standards)	5,339						
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	750	6,420	D	2,235	3,446	D	127	
Industrial	Fabricated Structural Metal Manufacturing	332312	500	27,520	D	11,914	10,399	D	D	
Industrial	Metal Window and Door Manufacturing	332321	750	10,194	D	3,012	4,751	1,341	D	
Industrial	Sheet Metal Work Manufacturing	332322	500	20,972	3,683	10,069	6,575			
Industrial	Metal Can Manufacturing	332431	1,500	15,672	D	2,815	12,656			
Industrial	Other Metal Container Manufacturing	332439	500	3,709	276	1,701	1,065	666		
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	500	10,249	677	3,298	5,487	787		
Industrial	Metal Heat Treating	332811	750	6,815	D	2,601	D			
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	500	13,554	1,468	6,439	5,647			
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	500	7,481	1,328	3,838	D	D		
Industrial	Other Fabricated Metal Manufacturing	332990	NA							
Industrial	Small Arms Ammunition Manufacturing	332992	1,250	3,774	D	D	D	D	D	D
Industrial	Ammunition (except Small Arms) Manufacturing	332993	1,500	3,626	D	D	D	D		D
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	750	14,893	2,468	5,873	5,840	712		
Industrial	Farm Machinery and Equipment Manufacturing	333111	1,250	35,805	D	3,616	9,434	6,197	6,845	D
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1,500	7,924	D	D	1,953	3,030	D	
Industrial	Construction Machinery Manufacturing	333120	1,250	43,643	D	3,865	8,794	8,008	16,629	D
Industrial	Mining Machinery and Equipment Manufacturing	333131	500	7,361	D	1,526	3,480	D	D	

Sector	Source Category	NAICS	SBA Size Standards (2017)	Receipts by Employee Size Categories (in millions of 2014\$)						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Printing Machinery and Equipment Manufacturing^	333293	500 (2007 Size Standards)	1,892						
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1,000	2,222	D	665	D			
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1,250	31,721	793	3,119	14,005	6,032	7,771	
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	500 (2007 Size Standards)	5,761						
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	500 (2007 Size Standards)	2,127						
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1,500	17,501	D	D	3,914	5,474	5,728	D
Industrial	Other Engine Equipment Manufacturing	333618	1,500	28,784	407	1,537	9,837	7,770	9,233	
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1,250	9,351	D	1,223	2,754	D	D	
Industrial	Welding and Soldering Equipment Manufacturing	333992	1,250	5,943	374	1,165	1,825		2,578	
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1,250	31,295	1,144	3,202	8,785	1,786	4,545	11,834
Industrial	Electron Tube Manufacturing^	334411	750 (2007 Size Standards)	1,297						
Industrial	Bare Printed Circuit Board Manufacturing	334412	750	4,632	D	1,431	2,401	D		
Industrial	Semiconductor and Related Device Manufacturing	334413	1,250	50,283	D	4,649	8,104	11,353	13,103	D
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	500	2,688	D	790	D	660	D	
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	1,000	289	D	D	D			
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1,250	1,954	D	D	1,076	D		
Industrial	Household Laundry Equipment Manufacturing	335224	1,250	D				D	D	D
Industrial	Other Major Household Appliance Manufacturing	335228	1,000	4,703	D	D	D	3,113	D	

Sector	Source Category	NAICS	SBA Size Standards (2017)	Receipts by Employee Size Categories (in millions of 2014\$)						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	750	6,005	D	996	3,463	778	D	
Industrial	Motor and Generator Manufacturing	335312	1,250	11,779	D	1,441	5,582	D	D	
Industrial	Storage Battery Manufacturing	335911	1,250	6,760	D	D	3,794	329		D
Industrial	Current-Carrying Wiring Device Manufacturing	335931	500	7,148	D	1,559	3,686	1,037	D	
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1,000	6,409	D	948	3,429	D	D	
Industrial	Carbon and Graphite Product Manufacturing	335991	750	3,683	D	732	2,422	D		
Industrial	Automobile Manufacturing	336111	1,500	112,518	D	D	D		29,726	77,778
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	1,500	126,372	D	D	159	D	D	83,050
Industrial	Heavy Duty Truck Manufacturing	336120	1,500	30,574	D	D	D	5,381	17,268	D
Industrial	Motor Vehicle Body Manufacturing	336211	1,000	11,832	D	2,680	5,214	2,438	D	
Industrial	Truck Trailer Manufacturing	336212	1,000	8,251	D	1,407	3,439	1,803	D	
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	1,000	30,438	D	1,471	8,102	17,377	D	
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	500 (2007 Size Standards)	2,440						
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	750 (2007 Size Standards)	27,998						
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	1,000	12,403	D	837	6,632	2,977	D	D
Industrial	Motor Vehicle Brake System Manufacturing	336340	1,250	11,254	D	983	7,021	1,645	D	
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	1,500	36,047	D	2,915	14,236	4,727	11,404	D
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1,500	23,073	D	1,786	13,181	6,966	D	
Industrial	Motor Vehicle Metal Stamping	336370	1,000	30,269	522	4,712	12,994	7,162	4,878	
Industrial	Other Motor Vehicle Parts Manufacturing	336390	1,000	59,408	2,323	6,716	28,850	15,746	5,772	
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	750 (2007 Size Standards)	52,593						
Industrial	Aircraft Manufacturing	336411	1,500	116,908	D	515	4,240	2,958	6,702	102,172
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	1,500	38,408	412	1,583	11,729	4,256	4,632	15,796

Sector	Source Category	NAICS	SBA Size Standards (2017)	Receipts by Employee Size Categories (in millions of 2014\$)						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	1,250	35,428	D	2,687	10,208	5,708	D	10,134
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1,250	4,355	D	D	D	D	2,747	
Industrial	Railroad Rolling Stock Manufacturing	336510	1,500	17,750	D	2,042	4,421	3,329	D	D
Industrial	Ship Building and Repairing	336611	1,250	25,803	614	1,829	4,863	2,370	2,242	13,885
Industrial	Boat Building	336612	1,000	7,374	D	1,561	4,403	522	D	
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	1,500	5,755	D	D	1,022	D	D	
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	750	11,135	D	D	3,483	1,835	D	
Industrial	Upholstered Household Furniture Manufacturing	337121	1,000	10,838	D	D	2,849	2,958	D	D
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	750	4,251	D	1,057	1,429	D	D	
Industrial	Institutional Furniture Manufacturing	337127	500	4,886	D	1,599	2,548	D		
Industrial	Wood Office Furniture Manufacturing	337211	1,000	2,672	D	488	1,504	D		
Industrial	Office Furniture (except Wood) Manufacturing	337214	1,000	8,796	D	546	2,972	1,322	D	D
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	500	6,924	D	2,168	3,415	595		
Industrial	Blind and Shade Manufacturing	337920	1,000	1,826	D	473	894	D		
Industrial	Surgical and Medical Instrument Manufacturing	339112	1,000	38,970	D	D	17,916	7,109	8,979	D
Industrial	Surgical Appliance and Supplies Manufacturing	339113	750	38,360	D	D	12,214	3,926	11,448	D
Industrial	Jewelry and Silverware Manufacturing	339910	500	7,860	1,204	1,861	D	D	D	
Industrial	Sporting and Athletic Goods Manufacturing	339920	750	10,645	970	2,520	3,882	1,088	2,186	
Industrial	Office Supplies (except Paper) Manufacturing	339940	750	2,869	D	704	1,751	D		
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	500	6,813	D	1,896	3,423	697	D	
Industrial	Burial Casket Manufacturing	339995	1,000	757	D	D	D	D		
Industrial	All Other Miscellaneous Manufacturing	339999	500	12,821	2,969	2,820	3,828	D	D	
Commercial	Grain and Field Bean Merchant Wholesalers	424510	200	239,363	105,846	91,561				

Sector	Source Category	NAICS	SBA Size Standards (2017)	Receipts by Employee Size Categories (in millions of 2014\$)						
				Total	≤19	20~99	100~499	500~999	1000~2499	≥2500
Commercial	Petroleum Bulk Stations and Terminals	424710	200	902,591	231,145	262,557				
Commercial	Scheduled Passenger Air Transportation	481111	1,500	162,576	5,121	16,112				
Commercial	Line-Haul Railroads	482111	1,500							
Energy	Pipeline Transportation of Crude Oil	486110	1,500	7,034	2,043	3,073				
Energy	Pipeline Transportation of Natural Gas	486210	\$27.5 million	23,776	8,168	8,103				
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1,500	6,637	1,656					
Commercial	Support Activities for Rail Transportation	488210	\$15 million	5,002	938	2,139				
Commercial	Marine Cargo Handling	488320	\$38.5 million	9,209	653	2,434				
Commercial	General Warehousing and Storage	493110	\$27.5 million	18,222	4,910	7,548				
Commercial	Other Warehousing and Storage	493190	\$27.5 million	6,249	1,203	1,661				
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	\$27.5 million	99,434	47,540	27,271				
Commercial	Testing Laboratories	541380	\$15 million	15,851	3,991	7,041				
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^^^	541715	1,000							
Commercial	All Other Support Services	561990	\$11 million	20,305	7,149	6,790				
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	\$38.5 million	6,928	898	2,328				
Waste Treatment	Solid Waste Landfill	562212	\$38.5 million	5,312	2,156	2,391				
Waste Treatment	Solid Waste Combustors and Incinerators	562213	\$38.5 million	2,575	D	1,861				
Waste Treatment	Remediation Services	562910	\$20.5 million	14,681	2,893	5,885				
Educational Services	Colleges, Universities, and Professional Schools	611310	\$27.5 million							
Commercial	Amusement and Theme Parks	713110	\$38.5 million	13,030	245	440				
Commercial	Linen and Uniform Supply	812330	NA							
Commercial	Industrial Launderers	812332	\$38.5 million	7,333	686	3,620				

Notes:

Blank cells represent unreported data in the category. NA means it is not a valid 2012 NAICS code, thus SBA Size Standards are not available. When sub-categories are aggregated to the reported size categories, we treated unreported data as zero since no receipts were reported in the sub-category.

When data is reported as “D” (“Withheld to avoid disclosing data for individual companies”) or “Q” (“Revenue not collected at this level of detail for multiestablishment firms”) for a sub-category or category, we report “D” or “Q,” respectively, in the corresponding cell.

^ These Source Categories have a 2007 NAICS description because they are not defined in the 2012 Census. The 2012 Census provides establishment and revenue data for these source categories on 2007 NAICS basis, as a total figure for all establishments and revenues. It does not provide a breakdown by employment size.

The following NAICS report aggregate data for other top employee size categories and thus are not reported in the table: 221111, 221112, 221117, 221118, 221122, 221210, 221310, 221320, 221330, 424510, 424710, 481111, 486110, 486210, 486910, 488210, 488320, 493110, 493190, 531120, 541380, 561990, 562211, 562212, 562213, 562910, 713110, and 812332.

For the following NAICS, total receipts include establishments which operated entire year and not operated entire year whereas the breakdown into categories is done for establishments operated entire year: 221111, 221112, 221117, 221118, 221122, 221210, 221310, 221320, 221330, 424510, 424710, 481111, 486110, 486210, 486910, 488210, 488320, 493110, 493190, 531120, 541380, 561990, 562211, 562212, 562213, 562910, 713110, and 812332.

For NAICS 115114, Post harvest Crop Activities, the data are from County Business Patterns, but there are no revenue data. Geography Area Series: County Business Patterns by Employment Size Class more information 2012 Business Patterns.

332990 is not a valid 2012 NAICS code, therefore there are no data available in the 2012 Economic Census. Also, the size standards for this NAICS code are not available in the 2007, 2016 or 2017 SBA Size Standards. There is not even a description of this NAICS code in any of the SBA Size Standards. It could be a 2002 NAICS code. We found its description as a 2002 NAICS Code in the “Survey of Current Business: Volume 88, Issues 1–6, January 1, 2008, U.S. Department of Commerce.

482111 NAICS code (line-haul railroad) is excluded from the Economic Census therefore no data are available.

541715 is not a valid 2012 NAICS code, therefore there are no data available in the 2012 Economic Census. Four Industries in the 2012 NAICS structure have been expanded for 2017. 541712—Research and Development in the Physical, Engineering and Life Sciences (except Biotechnology) has been expanded to include 541713—Research and Development in Nanotechnology 541715—Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology).

812330 is not a valid 2012 NAICS code; therefore, there are no data available in the 2012 Economic Census. This code seems to be not a NAICS code but an IRS Statistics of Income (SOI) Program Industry Code for coding the industrial activities of corporations filing returns (https://www.irs.gov/irm/part1/irm_01-013-007). The SOI codes correspond to NAICS codes such as 812330 corresponds to 812332 Industrial Launderers and 812331 Linen Supply, but is a different code.

For NAICS 611310, Colleges and Universities establishment and employment data are from County Business Patterns but there are no revenue data. Geography Area Series: County Business Patterns by Employment Size Class more information 2012 Business Patterns.

NAICS 922140 (Correctional Institutions), NAICS 927110 (Space Research and Technology), NAICS 928110 (National Security) are government/public administration NAICS codes not covered by the Census.

NAICS 999999 is an unclassified code and therefore no data are available for it.

Sources: 2012 Economic Census, 2017 SBA Size Standards, SBA February 2016 Size Standards, SBA 2007 Size Standards, St. Louis Federal Reserve.

6.2 Developing Economic and Small Entity Regulatory Relief Impact Measures

We measured the impacts of the rule on small entities in each sector using methods presented in the EPA’s Final SBREFA Guidance (U.S. EPA, 2006c). Because the rule covers a large number of sectors and primarily covers businesses, the analysis generated a set of sales tests (represented as potential avoided cost-to-receipt ratios)³² for NAICS codes associated with the affected sectors.

Although the appropriate SBA size definition should be applied at the parent company (enterprise) level, data limitations allowed us only to compute and compare ratios for a *model establishment* for 6 *establishment size* ranges (*i.e.*, all categories, establishments with 19 or fewer employees, 20 to 99 employees, 100 to 499 employees, 500 to 999 employees, 1,000 to 2,499 employees, and 2,500+ employees). This approach allowed us to account for differences in establishment receipts between large and small establishments and differences in small business definitions across affected industries. It is also a conservative approach because an establishment’s parent company (the “enterprise”) may have other economic resources that could be used to cover the costs of the reporting program.

6.3 Implementing the Sales Test to Measure Impacts on Industrial, Commercial and Other Sources under the Primary Scenario

The “sales test” is an approach that computes the annualized compliance costs as a share of sales for each company. The “sales test” is the methodology the EPA employs in economic impact analyses such as this one as opposed to a “profits test,” in which annualized compliance costs are calculated as a share of profits. This is because revenues or sales data are commonly available for entities affected by EPA regulations, and profits data normally made available are often not the true profits earned by firms because of accounting and tax considerations. Firms and entities often have ways legally available in the tax code to minimize reported profits; thus, using reported profits may lead to a less than accurate estimate of the economic impact of a regulation to an affected firm or entity and their consumers. Although screening-level analyses

³² The following metrics for other small entity economic impact measures (if applicable) would potentially include the following:

- Small government (if applicable): “Revenue” test—annualized compliance cost as a percentage of annual government revenues.
- Small nonprofits (if applicable): “Expenditure” test—annualized cost as a percentage of annual operating expenses.

are often employed to estimate impacts to small businesses or entities as part of an analysis in compliance with the Regulatory Flexibility Act as amended by SBREFA, a screening-level analysis can also be employed in an economic impact analysis such as this one whose focus is on regulated companies. Given the general lack of information on the identity of owners of companies potentially affected by the proposed rule, the EPA implemented the recommended sales test by computing avoided cost-to-sales ratios for affected sectors at the establishment (or facility) level.³³

The ratios compare the average establishment's total yearly avoided costs to the average establishment receipts for enterprises within several employment categories. The average entity avoided costs used to compute the sales test vary across sources but are the same across establishment size categories. As a result, the sales test will overstate the avoided cost-to-sales ratio for establishments owned by small businesses, because the reporting costs are likely lower than average entity estimates provided by the MM2A cost analysis. These avoided cost-to-sales ratios were calculated as follows.

First, for each source category, the industry net projected cost savings excluding permitting costs to the state agency for year 1 and net projected cost savings for year 2 were calculated. For year 1, the projected net cost savings included the facility's permitting costs, supporting statement cost savings, and the estimated area source rule burden; for year 2, the projected net cost savings included only the supporting statement cost savings and estimated area source rule burdens, because there are no permitting costs in year 2. Because many of the source categories shared primary NAICS codes, we aggregated the year 1 net projected cost savings excluding permitting costs to the state agency, and year 2 net projected cost savings, and the number of facilities projected to obtain area source status. Then we calculated the average projected net cost savings per facility for year 1 (see "Average Cost per Entity" in Table 6-4) and year 2 (see "Average Cost per Entity" in Table 6-5).

³³ Typically, SBREFA impact assessments are conducted at the ultimate parent company level. As noted above, we assumed that the Census definition of enterprise is equivalent to the ultimate parent company. Theoretically, the comparison of compliance costs to sales should be conducted at the enterprise level. Because Census only provides data for typical establishments within various enterprise size categories, the EPA chose to compute the cost-to-sales ratio at the establishment (or facility level). The same ratio could be computed at the enterprise level by multiplying both the numerator and the denominator by the typical number of establishments per enterprise in the appropriate enterprise size categories. Using the Economic Census data on typical establishments means that the cost-to-sales ratios are identical, whether computed at the establishment level or at the enterprise level.

Next, we calculated the average receipts per establishment for each NAICS code overall and for each size category by dividing the receipts (Table 6-3) by the number of establishments (Table 6-1). Frequently, receipts data are not available, so we were not able to calculate average receipts per establishment (or later, avoided cost-to-sales ratios) for certain size categories.

Finally, we calculated the year 1 and year 2 avoided cost-to-sales ratios for the primary scenario by dividing the average projected net cost savings per facility by the average receipts per establishment for the overall NAICS and the establishment size categories. The year 1 avoided cost-to-sales ratios are reported in Table 6-4, and the year 2 avoided cost-to-sales ratios are reported in Table 6-5. The year 1 avoided cost-to-sales ratios range from less than 0.01% to 11.08%, with a median potential avoided cost-to-sales ratio of 0.05% across all employment size categories. The twenty-fifth percentile and seventy-fifth percentile avoided cost-to-sales ratio in year 1 are 0.01% and 0.16% respectively across all employment size categories. The year 2 avoided cost-to-sales ratios range from less than 0.01% to 12.05%, with a median potential avoided cost-to-sales ratio of 0.06% across all employment size categories. The twenty-fifth percentile and seventy-fifth percentile avoided cost-to-sales ratios in year 2 are 0.02% and 0.22% respectively across all employment size categories.

Because facilities do not face permitting costs in year 2, the cost savings are larger in year 2 than year 1, and the resulting avoided cost-to-sales ratios are larger. For example, NAICS 337110 (Wood Kitchen Cabinet and Countertop Manufacturing) has an overall year 1 avoided cost-to-sales ratio of 0.56% and an overall year 2 avoided cost-to-sales ratio of 0.86%. Some NAICS codes that have less than 0.01% ratios in year 1 have positive ratios in year 2, such as NAICS 326150 (Urethane and other Foam Product [except Polystyrene] Manufacturing), which has an overall avoided cost-to-sales ratio of less than 0.01% in year 1 and 0.04% in year 2.

As discussed above, we conducted a small entity analysis for both year 1 and year 2 impact estimates. In year 1, some small size categories have small avoided cost-to-sales ratios. The “fewer than or equal to 19 employees” category of NAICS 424510 (Grain and Field Bean Merchant Wholesalers) has a 0.04% avoided cost-to-sales ratio, and the “20 to 99 employees” category of NAICS 326150 (Urethane and Other Foam Product [except Polystyrene] Manufacturing) has a less than 0.01% avoided cost-to-sales ratio. However, there are cases of larger positive economic impacts for small size categories in year 1 including the “fewer than or

equal to 19 employees” category of NAICS 339999 (All Other Miscellaneous Manufacturing), which has a 11.08% avoided cost-to-sales ratio in year 1. For the same size category, NAICS 493190 (Other Warehousing and Storage) has an avoided cost-to-sales ratio of 2.66% in year 1. Establishments in the “fewer than or equal to 19 employees” category for NAICS 493190 are considered small businesses for purposes of this analysis because the average receipts per establishment is \$0.7 million which is less than the SBA size standard of \$27.5 million.

In year 2, small entities generally have larger cost savings and the resulting avoided cost-to-sales ratios are larger. For example, for NAICS 213112 (Support Activities for Oil and Gas Operations) the “fewer than or equal to 19 employees” category has an avoided cost-to-sales ratio of 0.85% in year 1 and in year 2, the ratio is 1.08%. Establishments in the “fewer than or equal to 19 employees” size category for NAICS 213112 are considered small businesses for purposes of this analysis because the average receipts per establishment is \$2.1 million which is less than the SBA size standard of \$38.5 million. For NAICS 339999, for the “fewer than or equal to 19 employees” category, the avoided cost-to-sales ratio in year 2 is 12.05%.

Smaller entities having larger impacts in some cases is probably a result of smaller establishments generally having lower average receipts per establishment than larger establishments and the assumption that the average cost per entity is approximately the same for different establishment sizes within a NAICS code.

As is evident from Tables 6-4 and 6-5, we did not calculate and report avoided cost-to-sales ratios in certain cases, because we used the 2012 Economic Census to collect and organize data on number of establishments, employment and receipts for affected sources represented by six-digit NAICS codes. However, because of confidentiality issues, some data values were not available or were reported with a range of values. Also, some source categories are not completely covered by the 2012 Economics Census. Table 7-1 in Section 7 describes the data limitations for the source categories not completely covered by the 2012 Economic Census.

These data limitations prevented us from reporting avoided cost-to-sales ratios entirely for some NAICS codes and for every employment size category for some NAICS codes.

The number of establishments was not reported for the larger employee size categories for some NAICS codes. For example, for NAICS 221320 (Sewage Treatment Facilities) the number of establishments was only reported for “500+ employees” instead of separately for “500

to 999 employees,” “1,000 to 2,499 employees,” and “2,500+ employees.” Similarly, for NAICS codes 486210 (Pipeline Transportation of Natural Gas), 493110 (General Warehousing and Storage), and 562211 (Hazardous Waste Treatment and Disposal), the number of establishments was only reported for “100+ employees.” This issue arises for employment and receipts data as well as for these NAICS codes in the same employee size categories. Therefore, we were not able to compute impact estimates for these size categories for these NAICS codes.

Regarding the reporting of employment data in the 2012 Economic Census, an issue is that many categories are reported in ranges. For example, the “2,500+ employees” category for NAICS 211111 (Crude Petroleum and Natural Gas Extraction) is simply reported as “10,000–24,999” employees. Employment does not directly affect the calculation of the impact estimates, so this limitation is not an issue for the avoided cost-to-sales ratios.

For receipts data, many data values are not available especially for the different employee size categories. More commonly, unavailable data are reported as “Q,” meaning “Revenue not collected at this level of detail for multi-establishment firms,” or “D,” meaning “Withheld to avoid disclosing data for individual companies.” Receipts data are essential to calculating the avoided cost-to-sales ratios, but because many data values are unavailable, we are limited in which avoided cost-to-sales ratios we can calculate and report. Also, receipts data are defined differently depending on the NAICS codes.

The underlying establishment and receipts data are a limiting factor because if either of these measures is not reported for a certain category, we cannot calculate the average receipts per establishment, which is needed for the avoided cost-to-sales ratio calculation. However, there are cases where avoided cost-to-sales ratios are not reported because zero facilities are projected to obtain area source status; therefore, there are no facilities to calculate the average cost per entity.

The public administration NAICS have facilities projected to obtain area source status, but because these NAICS codes comprise government facilities, the relevant sales data (establishments and revenue) are not available for these NAICS codes. Similarly, NAICS 999999 is an unclassified code, and the 2012 Economic Census does not provide establishments or revenue data for this NAICS code. Therefore, no data or cost-to-sales ratios are presented for them. All of this data can be found in ProposalMM2ARIAdataspreadsheetMay_2019.xls that can be found in the docket for this rulemaking.

Table 6-4 Avoided Cost to Sales in Year 1 under the Primary Scenario

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	\$27.5 million	9,845	*	*	*	*	*	*	*
Energy	Crude Petroleum and Natural Gas Extraction	211111	1,250 (Feb 2016 Size Standards)	5,487	0.01%	*	0.01%	0.00%	0.00%	0.00%	*
Energy	Natural Gas Liquid Extraction	211112	750 (Feb 2016 Size Standards)	38,142	0.03%	0.06%	0.02%	0.01%	0.00%	*	*
Industrial	Iron Ore Mining	212210	750	18,153	0.01%	*	0.13%	0.01%	*	*	*
Industrial	Lead Ore and Zinc Ore Mining	212231	750 (Feb 2016 Size Standards)	9,845	0.01%	*	*	*	*	*	*
Industrial	Copper Ore and Nickel Ore Mining	212234	1,500 (Feb 2016 Size Standards)	9,845	0.00%	*	*	*	0.00%	*	*
Industrial	All Other Metal Ore Mining	212299	750	9,845	0.02%	*	*	0.01%	*	*	*
Industrial	Industrial Sand Mining	212322	500	18,153	0.14%	0.44%	0.09%	0.02%	*	*	*
Industrial	Kaolin and Ball Clay Mining	212324	750	18,153	0.06%	*	0.14%	0.02%	*	*	*
Industrial	Potash, Soda, and Borate Mineral Mining	212391	750	56,521	0.05%	*	*	*	0.01%	*	*
Industrial	All Other Nonmetallic Mineral Mining	212399	500	9,845	0.23%	*	0.12%	*	*	*	*
Energy	Support Activities for Oil and Gas Operations	213112	\$38.5 million	18,153	0.20%	0.85%	0.19%	0.04%	0.01%	0.00%	*
Utilities	Hydroelectric Power Generation	221111	500	9,845	0.16%	*	*	*	*	*	*
Utilities	Fossil Fuel Electric Power Generation	221112	750	34,315	0.06%	*	*	*	*	*	*
Utilities	Biomass Electric Power Generation	221117	250	56,521	0.81%	*	*	*	*	*	*
Utilities	Other Electric Power Generation	221118	250	9,845	0.40%	*	*	*	*	*	*
Utilities	Other Electric Power Generation^	221119	4 million MWH (2007 Size Standards)	50,509	0.48%	*	*	*	*	*	*
Utilities	Electric Power Distribution	221122	1,000	9,845	0.02%	*	*	*	*	*	*
Utilities	Natural Gas Distribution	221210	1,000	38,891	0.10%	*	*	*	*	*	*
Utilities	Water Supply and Irrigation Systems	221310	\$27.5 million	18,153	0.75%	*	*	*	*	*	*
Utilities	Sewage Treatment Facilities	221320	\$20.5 million	19,628	0.98%	*	*	*	*	*	*
Utilities	Steam and Air-Conditioning Supply	221330	\$15 million	29,657	0.19%	*	*	*	*	*	*
Industrial	Other Animal Food Manufacturing	311119	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Wet Corn Milling	311221	1,250	18,153	0.01%	*	0.03%	0.00%	*	*	*
Industrial	Soybean Processing^	311222	500 (2007 Size Standards)	18,153	0.01%	*	*	*	*	*	*
Industrial	Other Oilseed Processing^	311223	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Soybean and Other Oilseed Processing	311224	1,000	28,724	0.01%	*	0.01%	*	*	*	*
Industrial	Fats and Oils Refining and Blending	311225	1,000		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Beet Sugar Manufacturing	311313	750	9,845	0.01%	*	*	*	0.00%	*	*
Industrial	Cane Sugar Manufacturing	311314	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Fruit and Vegetable Canning	311421	1,000		**	*,**	**	**	*,**	*,**	*,**
Industrial	Specialty Canning	311422	1,250		**	*,**	*,**	*,**	**	*,**	*,**
Industrial	Cheese Manufacturing	311513	1,250		**	**	**	**	**	**	*,**
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Rendering and Meat Byproduct Processing	311613	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Commercial Bakeries	311812	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Other Snack Food Manufacturing	311919	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	Coffee and Tea Manufacturing	311920	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Spice and Extract Manufacturing	311942	500		**	*,**	**	**	*,**	*,**	*,**
Industrial	All Other Miscellaneous Food Manufacturing	311999	500		**	*,**	**	**	**	*,**	*,**
Industrial	Breweries	312120	1,250	18,153	0.05%	*	0.12%	*	*	*	*
Industrial	Distilleries	312140	1,000	9,845	0.02%	*	*	*	*	*	*
Industrial	Tobacco Manufacturing	312230	1,500	9,845	0.00%	*	*	0.00%	0.00%	*	*
Industrial	Yarn Spinning Mills^	313111	500 (2007 Size Standards)	9,845	0.04%	*	*	*	*	*	*
Industrial	Thread Mills^	313113	500 (2007 Size Standards)	9,845	0.15%	*	*	*	*	*	*
Industrial	Broadwoven Fabric Mills	313210	1,000	18,153	0.13%	*	0.15%	0.04%	0.01%	*	*
Industrial	Narrow Fabric Mills^	313221	500 (2007 Size Standards)	9,845	0.15%	*	*	*	*	*	*
Industrial	Textile and Fabric Finishing Mills	313310	1,000	9,845	0.16%	*	0.08%	0.02%	*	*	*
Industrial	Broadwoven Fabric Finishing Mills^	313311	1,000 (2007 Size Standards)	18,153	0.26%	*	*	*	*	*	*
Industrial	Fabric Coating Mills	313320	1,000	14,981	0.11%	*	0.08%	*	*	*	*
Industrial	Tire Cord and Tire Fabric Mills^	314992	1,000 (2007 Size Standards)	9,845	0.01%	*	*	*	*	*	*
Industrial	Leather and Hide Tanning and Finishing	316110	500	4,975	0.06%	*	0.02%	0.01%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Sawmills	321113	500	35,060	0.53%	2.60%	0.27%	0.07%	*	*	*
Industrial	Wood Preservation	321114	500	18,153	0.17%	*	0.07%	*	*	*	*
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	500	18,153	0.17%	*	*	0.04%	*	*	*
Industrial	Softwood Veneer and Plywood Manufacturing	321212	1,250	31,639	0.07%	*	*	0.04%	0.02%	*	*
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	750	56,521	0.65%	*	*	0.09%	*	*	*
Industrial	Reconstituted Wood Product Manufacturing	321219	750	26,945	0.09%	*	*	0.03%	*	*	*
Industrial	Wood Window and Door Manufacturing	321911	1,000	18,153	0.22%	*	*	0.04%	*	*	*
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	500	18,153	0.29%	1.22%	0.16%	*	*	*	*
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	500	18,153	0.61%	2.07%	0.20%	0.04%	*	*	*
Industrial	Pulp Mills	322110	750		**	*,**	*,**	**	**	*,**	*,**
Industrial	Paper (except Newsprint) Mills	322121	1,250		**	*,**	*,**	**	**	**	*,**
Industrial	Newsprint Mills	322122	750		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Paperboard Mills	322130	1,250		**	*,**	*,**	**	**	*,**	*,**
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	1,250	15,992	0.06%	0.49%	0.06%	0.02%	*	*	*
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	750		**	*,**	**	**	**	*,**	*,**
Industrial	Coated and Laminated Paper Manufacturing^	322222	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Sanitary Paper Product Manufacturing	322291	1,500		**	*,**	*,**	**	**	*,**	*,**
Industrial	All Other Converted Paper Product Manufacturing	322299	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Commercial Lithographic Printing^	323110	500 (2007 Size Standards)	9,845	0.25%	*	*	*	*	*	*
Industrial	Commercial Printing (except Screen and Books)	323111	500	11,985	0.36%	*	0.15%	0.03%	0.01%	*	*
Industrial	Books Printing	323117	1,250	18,153	0.20%	*	*	0.04%	0.02%	*	*
Industrial	Petroleum Refineries	324110	1,500	158,951	0.00%	*	0.06%	0.00%	*	0.00%	*
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	750		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Petrochemical Manufacturing	325110	1,000	1,465	0.00%	*	*	0.00%	*	*	*
Industrial	Industrial Gas Manufacturing	325120	1,000	9,845	0.06%	0.15%	0.04%	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1,000		**	*,**	**	**	*,**	*,**	*,**
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	1,000 (2007 Size Standards)	9,845	0.01%	*	*	*	*	*	*
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	1,000	15,383	0.03%	*	0.03%	0.01%	0.00%	*	*
Industrial	Alkalies and Chlorine Manufacturing^	325181	1,000 (2007 Size Standards)	10,961	0.01%	*	*	*	*	*	*
Industrial	Carbon Black Manufacturing^	325182	500 (2007 Size Standards)	6,771	0.01%	*	*	*	*	*	*
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	1,000 (2007 Size Standards)	4,152	0.01%	*	*	*	*	*	*
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Ethyl Alcohol Manufacturing	325193	1,000	18,153	0.01%	*	0.01%	0.00%	*	*	*
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	All Other Basic Organic Chemical Manufacturing	325199	1,250	43,179	0.04%	*	0.07%	0.01%	0.00%	0.00%	*
Industrial	Plastics Material and Resin Manufacturing	325211	1,250	142,365	0.17%	*	0.33%	0.04%	0.01%	0.01%	*
Industrial	Synthetic Rubber Manufacturing	325212	1,000	(2,082)	0.00%	*	0.00%	*	*	*	*
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	1,000	18,153	0.03%	*	0.08%	0.01%	0.00%	*	*
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	1,000 (2007 Size Standards)	97,301	0.15%	*	*	*	*	*	*
Industrial	Nitrogenous Fertilizer Manufacturing	325311	1,000	43,731	0.08%	*	0.08%	*	*	*	*
Industrial	Phosphatic Fertilizer Manufacturing	325312	750	18,153	0.01%	*	*	*	*	*	*
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	1,000	50,389	0.07%	*	0.08%	0.02%	*	*	*
Industrial	Medicinal and Botanical Manufacturing	325411	1,000	9,845	0.03%	*	0.06%	0.01%	0.00%	*	*
Industrial	Pharmaceutical Preparation Manufacturing	325412	1,250	115,787	0.10%	*	*	0.04%	0.02%	0.01%	*
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1,250		**	*,**	*,**	**	**	**	*,**
Industrial	Paint and Coating Manufacturing	325510	1,000	115,828	0.54%	*	0.39%	0.09%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Adhesive Manufacturing	325520	500	9,845	0.04%	0.24%	0.03%	0.01%	*	*	*
Industrial	Surface Active Agent Manufacturing	325613	750		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Toilet Preparation Manufacturing	325620	1,250		**	**	**	**	**	**	*,**
Industrial	Explosives Manufacturing	325920	750		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Custom Compounding of Purchased Resins	325991	500	18,153	0.08%	*	0.07%	0.01%	*	*	*
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	1,500	9,845	0.03%	*	0.05%	0.01%	*	*	*
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	500	15,383	0.09%	0.49%	0.05%	0.01%	0.01%	*	*
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	1,000	56,521	0.17%	1.81%	0.27%	0.07%	*	*	*
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	750	31,838	0.10%	*	0.15%	0.03%	0.01%	*	*
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	500	9,845	0.06%	*	0.08%	0.02%	*	*	*
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	750	9,845	0.05%	0.23%	0.04%	0.02%	*	*	*
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	500	47,186	0.31%	*	0.30%	*	*	*	*
Industrial	Polystyrene Foam Product Manufacturing	326140	1,000	9,845	0.05%	*	0.06%	0.01%	0.00%	*	*
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	750	510	0.00%	*	0.00%	0.00%	*	*	*
Industrial	Plastics Plumbing Fixture Manufacturing	326191	750	18,153	0.23%	*	0.19%	*	*	*	*
Industrial	All Other Plastics Product Manufacturing	326199	750	32,510	0.25%	2.17%	0.29%	0.06%	0.02%	0.01%	*
Industrial	Tire Manufacturing (except Retreading)	326211	1,500	30,079	0.02%	*	*	0.02%	0.01%	0.00%	*
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	750	56,521	0.27%	*	*	0.08%	0.04%	*	*
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	750	18,153	0.11%	*	*	0.03%	0.01%	*	*
Industrial	All Other Rubber Product Manufacturing	326299	500	35,914	0.22%	1.82%	0.25%	0.05%	*	*	*
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	1,000	12,008	0.36%	*	0.18%	0.03%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	750	9,845	0.04%	*	0.04%	0.01%	*	*	*
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Iron Foundries	331511	1,000	23,302	0.08%	*	*	0.04%	0.01%	*	*
Industrial	Steel Foundries (except Investment)	331513	500		**	*,**	**	**	**	*,**	*,**
Industrial	Aluminum Die-Casting Foundries^	331521	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Aluminum Foundries (except Die-Casting)	331524	500		**	*,**	**	**	*,**	*,**	*,**
Industrial	Nonferrous Forging	332112	750	9,845	0.02%	*	*	0.01%	0.00%	*	*
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	500	9,845	0.12%	0.73%	0.10%	0.02%	0.01%	*	*
Industrial	Hand and Edge Tool Manufacturing^	332212	500 (2007 Size Standards)	9,845	0.17%	*	*	*	*	*	*
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	750	9,845	0.10%	*	0.07%	0.02%	*	*	*
Industrial	Fabricated Structural Metal Manufacturing	332312	500	9,845	0.11%	*	0.08%	0.02%	*	*	*
Industrial	Metal Window and Door Manufacturing	332321	750	50,509	0.54%	*	0.50%	0.11%	0.03%	*	*
Industrial	Sheet Metal Work Manufacturing	332322	500	9,845	0.19%	0.75%	0.11%	0.03%	*	*	*
Industrial	Metal Can Manufacturing	332431	1,500	38,331	0.04%	*	0.07%	0.03%	*	*	*
Industrial	Other Metal Container Manufacturing	332439	500	15,383	0.14%	1.14%	0.10%	0.03%	0.01%	*	*
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	500	9,845	0.08%	0.67%	0.08%	0.02%	0.01%	*	*
Industrial	Metal Heat Treating	332811	750	9,845	0.12%	*	0.12%	*	*	*	*
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	500	37,156	0.69%	4.59%	0.37%	0.05%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	500	15,383	0.50%	1.95%	0.26%	*	*	*	*
Industrial	Other Fabricated Metal Manufacturing	332990	NA	9,845	*	*	*	*	*	*	*
Industrial	Small Arms Ammunition Manufacturing	332992	1,250	9,845	0.03%	*	*	*	*	*	*
Industrial	Ammunition (except Small Arms) Manufacturing	332993	1,500	15,383	0.02%	*	*	*	*	*	*
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	750	15,383	0.39%	1.79%	0.19%	0.03%	0.01%	*	*
Industrial	Farm Machinery and Equipment Manufacturing	333111	1,250	50,509	0.16%	*	0.40%	0.05%	0.01%	0.01%	*
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1,500	9,845	0.02%	*	*	0.01%	0.00%	*	*
Industrial	Construction Machinery Manufacturing	333120	1,250	74,964	0.13%	*	0.50%	0.07%	0.01%	0.00%	*
Industrial	Mining Machinery and Equipment Manufacturing	333131	500	18,153	0.07%	*	0.12%	0.02%	*	*	*
Industrial	Printing Machinery and Equipment Manufacturing^	333293	500 (2007 Size Standards)	9,845	0.18%	*	*	*	*	*	*
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1,000	9,845	0.10%	*	0.07%	*	*	*	*
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1,250	9,845	0.03%	0.54%	0.07%	0.01%	0.00%	0.00%	*
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	500 (2007 Size Standards)	9,845	0.06%	*	*	*	*	*	*
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	500 (2007 Size Standards)	9,845	0.07%	*	*	*	*	*	*
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1,500	9,845	0.01%	*	*	0.01%	0.00%	0.00%	*
Industrial	Other Engine Equipment Manufacturing	333618	1,500	56,521	0.06%	2.34%	0.27%	0.04%	0.01%	0.00%	*
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1,250	9,845	0.03%	*	0.07%	0.01%	*	*	*
Industrial	Welding and Soldering Equipment Manufacturing	333992	1,250	18,153	0.10%	1.15%	0.12%	0.02%	*	0.00%	*
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1,250	9,845	0.03%	0.46%	0.06%	0.01%	0.00%	0.00%	0.00%

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Electron Tube Manufacturing^	334411	750 (2007 Size Standards)	9,845	0.06%	*	*	*	*	*	*
Industrial	Bare Printed Circuit Board Manufacturing	334412	750	9,845	0.12%	*	0.12%	0.03%	*	*	*
Industrial	Semiconductor and Related Device Manufacturing	334413	1,250	34,533	0.06%	*	0.12%	0.04%	0.01%	0.00%	*
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	500	9,845	0.11%	*	0.09%	*	0.00%	*	*
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	1,000		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1,250	9,845	0.03%	*	*	0.02%	*	*	*
Industrial	Household Laundry Equipment Manufacturing	335224	1,250	23,546	*	*	*	*	*	*	*
Industrial	Other Major Household Appliance Manufacturing	335228	1,000	18,153	0.01%	*	*	*	0.00%	*	*
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	750	9,845	0.04%	*	0.07%	0.01%	0.01%	*	*
Industrial	Motor and Generator Manufacturing	335312	1,250	18,153	0.07%	*	0.16%	0.02%	*	*	*
Industrial	Storage Battery Manufacturing	335911	1,250	9,845	0.02%	*	*	0.01%	0.01%	*	*
Industrial	Current-Carrying Wiring Device Manufacturing	335931	500	9,845	0.06%	*	0.09%	0.02%	0.00%	*	*
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1,000	9,845	0.03%	*	0.05%	0.01%	*	*	*
Industrial	Carbon and Graphite Product Manufacturing	335991	750	50,509	0.21%	*	0.32%	0.06%	*	*	*
Industrial	Automobile Manufacturing	336111	1,500	35,785	0.01%	*	*	*	*	0.00%	0.00%
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	1,500	56,521	0.00%	*	*	0.11%	*	*	0.00%
Industrial	Heavy Duty Truck Manufacturing	336120	1,500	43,731	0.01%	*	*	*	0.01%	0.00%	*
Industrial	Motor Vehicle Body Manufacturing	336211	1,000	43,731	0.28%	*	0.40%	0.08%	0.02%	*	*
Industrial	Truck Trailer Manufacturing	336212	1,000	9,845	0.05%	*	0.09%	0.02%	0.00%	*	*
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	1,000	18,153	0.05%	*	0.14%	0.02%	0.00%	*	*
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	500 (2007 Size Standards)	9,845	0.04%	*	*	*	*	*	*
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	750 (2007 Size Standards)	18,153	0.05%	*	*	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	1,000	18,153	0.04%	*	0.10%	0.02%	0.01%	*	*
Industrial	Motor Vehicle Brake System Manufacturing	336340	1,250	9,845	0.02%	*	0.04%	0.01%	0.00%	*	*
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	1,500	18,153	0.03%	*	0.07%	0.01%	0.01%	0.00%	*
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1,500	9,845	0.02%	*	0.05%	0.01%	0.00%	*	*
Industrial	Motor Vehicle Metal Stamping	336370	1,000	9,845	0.03%	0.47%	0.06%	0.01%	0.00%	0.00%	*
Industrial	Other Motor Vehicle Parts Manufacturing	336390	1,000	34,282	0.09%	1.30%	0.17%	0.03%	0.01%	0.00%	*
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	750 (2007 Size Standards)	18,153	0.05%	*	*	*	*	*	*
Industrial	Aircraft Manufacturing	336411	1,500	96,328	0.02%	*	0.97%	0.10%	0.03%	0.01%	0.00%
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	1,500	43,731	0.05%	2.16%	0.33%	0.05%	0.01%	0.01%	0.00%
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	1,250	43,731	0.11%	*	0.32%	0.06%	0.02%	*	0.00%
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1,250	9,845	0.01%	*	*	*	*	0.00%	*
Industrial	Railroad Rolling Stock Manufacturing	336510	1,500	9,845	0.01%	*	0.04%	0.01%	0.00%	*	*
Industrial	Ship Building and Repairing	336611	1,250	42,999	0.12%	2.90%	0.40%	0.07%	0.03%	0.01%	0.00%
Industrial	Boat Building	336612	1,000	75,897	0.91%	*	0.74%	0.12%	0.06%	*	*
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	1,500	18,153	0.01%	*	*	0.02%	*	*	*
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	750	9,068	0.56%	*	*	0.03%	0.01%	*	*
Industrial	Upholstered Household Furniture Manufacturing	337121	1,000	18,153	0.21%	*	*	0.05%	0.01%	*	*
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	750	33,500	1.91%	*	0.59%	0.12%	*	*	*
Industrial	Institutional Furniture Manufacturing	337127	500	9,845	0.14%	*	0.14%	0.03%	*	*	*
Industrial	Wood Office Furniture Manufacturing	337211	1,000	56,521	0.80%	*	0.79%	0.12%	*	*	*
Industrial	Office Furniture (except Wood) Manufacturing	337214	1,000	25,671	0.07%	*	0.29%	0.04%	0.01%	*	*
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	500	9,845	0.16%	*	0.12%	0.02%	0.01%	*	*
Industrial	Blind and Shade Manufacturing	337920	1,000	9,845	0.19%	*	0.12%	0.03%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Surgical and Medical Instrument Manufacturing	339112	1,000	18,153	0.06%	*	*	0.02%	0.01%	0.00%	*
Industrial	Surgical Appliance and Supplies Manufacturing	339113	750	9,845	0.05%	*	*	0.01%	0.00%	0.00%	*
Industrial	Jewelry and Silverware Manufacturing	339910	500	9,845	0.26%	1.48%	0.11%	*	*	*	*
Industrial	Sporting and Athletic Goods Manufacturing	339920	750	9,845	0.15%	1.33%	0.10%	0.02%	0.00%	0.00%	*
Industrial	Office Supplies (except Paper) Manufacturing	339940	750	9,845	0.18%	*	0.11%	0.01%	*	*	*
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	500	18,153	0.15%	*	0.17%	0.04%	0.01%	*	*
Industrial	Burial Casket Manufacturing	339995	1,000	18,153	0.26%	*	*	*	*	*	*
Industrial	All Other Miscellaneous Manufacturing	339999	500	56,521	2.77%	11.08%	0.84%	0.08%	*	*	*
Commercial	Grain and Field Bean Merchant Wholesalers	424510	200	9,845	0.02%	0.04%	0.01%	*	*	*	*
Commercial	Petroleum Bulk Stations and Terminals	424710	200	56,521	0.03%	0.08%	0.02%	*	*	*	*
Commercial	Scheduled Passenger Air Transportation	481111	1,500	18,153	0.02%	0.36%	0.07%	*	*	*	*
Commercial	Line-Haul Railroads	482111	1,500	9,845	*	*	*	*	*	*	*
Energy	Pipeline Transportation of Crude Oil	486110	1,500	9,845	0.09%	0.24%	0.04%	*	*	*	*
Energy	Pipeline Transportation of Natural Gas	486210	\$27.5 million	9,073	0.08%	0.19%	0.03%	*	*	*	*
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1,500	9,845	0.09%	0.29%	*	*	*	*	*
Commercial	Support Activities for Rail Transportation	488210	\$15 million	18,153	0.46%	1.64%	0.26%	*	*	*	*
Commercial	Marine Cargo Handling	488320	\$38.5 million	18,153	0.09%	0.60%	0.10%	*	*	*	*
Commercial	General Warehousing and Storage	493110	\$27.5 million	20,298	1.14%	2.35%	0.72%	*	*	*	*
Commercial	Other Warehousing and Storage	493190	\$27.5 million	18,153	0.73%	2.66%	0.53%	*	*	*	*
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	\$27.5 million	9,845	0.34%	0.57%	0.04%	*	*	*	*
Commercial	Testing Laboratories	541380	\$15 million	18,153	0.76%	2.10%	0.32%	*	*	*	*
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	1,000	18,153	*	*	*	*	*	*	*
Commercial	All Other Support Services	561990	\$11 million	9,845	0.63%	1.33%	0.19%	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	\$38.5 million	80,813	0.99%	4.74%	0.70%	*	*	*	*
Waste Treatment	Solid Waste Landfill	562212	\$38.5 million	85,650	2.06%	3.99%	0.64%	*	*	*	*
Waste Treatment	Solid Waste Combustors and Incinerators	562213	\$38.5 million	18,153	0.08%	*	0.05%	*	*	*	*
Waste Treatment	Remediation Services	562910	\$20.5 million	9,845	0.27%	0.86%	0.14%	*	*	*	*
Educational Services	Colleges, Universities, and Professional Schools	611310	\$27.5 million	41,217	*	*	*	*	*	*	*
Commercial	Amusement and Theme Parks	713110	\$38.5 million	9,845	0.03%	0.42%	0.13%	*	*	*	*
Commercial	Linen and Uniform Supply	812330	NA	9,845	*	*	*	*	*	*	*
Commercial	Industrial Launderers	812332	\$38.5 million	18,153	0.32%	1.22%	0.30%	*	*	*	*

Notes:

Blanks in “Average Avoided Cost/Entity” column are for NAICS where zero facilities are projected to obtain area source status. NA means it is not a valid 2012 NAICS code, thus SBA Size Standards are not available.

*No receipts data available from Census; cost-to-sales ratios cannot be calculated.

**Zero facilities projected to obtain area source status and no projected net costs (savings); cost-to-sales ratios cannot be calculated.

***Denotes data status as the combination of footnotes * and **.

Sources: 2012 Economic Census, 2012 County Business Patterns, 2017 SBA Size Standards, Federal Reserve Bank of St. Louis Economic Research, Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD. May 12, 2019. SBA February 2016 Size Standards, SBA 2007 Size Standards.

Table 6-5 Avoided Cost to Sales in Year 2 under the Primary Scenario

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	\$27.5 million	14,813	*	*	*	*	*	*	*
Energy	Crude Petroleum and Natural Gas Extraction	211111	1,250 (Feb 2016 Size Standards)	10,455	0.02%	*	0.01%	0.00%	0.00%	0.00%	*
Energy	Natural Gas Liquid Extraction	211112	750 (Feb 2016 Size Standards)	43,110	0.04%	0.07%	0.03%	0.01%	0.00%	*	*
Industrial	Iron Ore Mining	212210	750	23,121	0.01%	*	0.16%	0.01%	*	*	*
Industrial	Lead Ore and Zinc Ore Mining	212231	750 (Feb 2016 Size Standards)	14,813	0.01%	*	*	*	*	*	*
Industrial	Copper Ore and Nickel Ore Mining	212234	1,500 (Feb 2016 Size Standards)	14,813	0.01%	*	*	*	0.00%	*	*
Industrial	All Other Metal Ore Mining	212299	750	14,813	0.02%	*	*	0.01%	*	*	*
Industrial	Industrial Sand Mining	212322	500	23,121	0.18%	0.55%	0.12%	0.03%	*	*	*
Industrial	Kaolin and Ball Clay Mining	212324	750	23,121	0.08%	*	0.18%	0.03%	*	*	*
Industrial	Potash, Soda, and Borate Mineral Mining	212391	750	61,489	0.05%	*	*	*	0.01%	*	*
Industrial	All Other Nonmetallic Mineral Mining	212399	500	14,813	0.35%	*	0.18%	*	*	*	*
Energy	Support Activities for Oil and Gas Operations	213112	\$38.5 million	23,121	0.25%	1.08%	0.25%	0.05%	0.01%	0.00%	*
Utilities	Hydroelectric Power Generation	221111	500	14,813	0.24%	*	*	*	*	*	*
Utilities	Fossil Fuel Electric Power Generation	221112	750	39,283	0.07%	*	*	*	*	*	*
Utilities	Biomass Electric Power Generation	221117	250	61,489	0.88%	*	*	*	*	*	*
Utilities	Other Electric Power Generation	221118	250	14,813	0.59%	*	*	*	*	*	*
Utilities	Other Electric Power Generation^	221119	4 million MWH (2007 Size Standards)	55,477	0.53%	*	*	*	*	*	*
Utilities	Electric Power Distribution	221122	1,000	14,813	0.04%	*	*	*	*	*	*
Utilities	Natural Gas Distribution	221210	1,000	43,859	0.11%	*	*	*	*	*	*
Utilities	Water Supply and Irrigation Systems	221310	\$27.5 million	23,121	0.96%	*	*	*	*	*	*
Utilities	Sewage Treatment Facilities	221320	\$20.5 million	24,596	1.23%	*	*	*	*	*	*
Utilities	Steam and Air-Conditioning Supply	221330	\$15 million	34,625	0.22%	*	*	*	*	*	*
Industrial	Other Animal Food Manufacturing	311119	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Wet Corn Milling	311221	1,250	23,121	0.01%	*	0.04%	0.00%	*	*	*
Industrial	Soybean Processing^	311222	500 (2007 Size Standards)	23,121	0.01%	*	*	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)							
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500	
Industrial	Other Oilseed Processing^	311223	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Soybean and Other Oilseed Processing	311224	1,000	33,692	0.01%	*	0.01%	*	*	*	*	*
Industrial	Fats and Oils Refining and Blending	311225	1,000		**	*,**	**	*,**	*,**	*,**	*,**	*,**
Industrial	Beet Sugar Manufacturing	311313	750	14,813	0.01%	*	*	*	0.00%	*	*	*
Industrial	Cane Sugar Manufacturing	311314	1,000		**	*,**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	1,000		**	*,**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Fruit and Vegetable Canning	311421	1,000		**	*,**	**	**	*,**	*,**	*,**	*,**
Industrial	Specialty Canning	311422	1,250		**	*,**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Cheese Manufacturing	311513	1,250		**	**	**	**	**	**	**	*,**
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	750		**	*,**	**	**	*,**	*,**	*,**	*,**
Industrial	Rendering and Meat Byproduct Processing	311613	750		**	*,**	**	**	*,**	*,**	*,**	*,**
Industrial	Commercial Bakeries	311812	1,000		**	*,**	**	**	**	*,**	*,**	*,**
Industrial	Other Snack Food Manufacturing	311919	1,250		**	*,**	**	**	*,**	*,**	*,**	*,**
Industrial	Coffee and Tea Manufacturing	311920	750		**	*,**	**	**	*,**	*,**	*,**	*,**
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1,000		**	*,**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Spice and Extract Manufacturing	311942	500		**	*,**	**	**	*,**	*,**	*,**	*,**
Industrial	All Other Miscellaneous Food Manufacturing	311999	500		**	*,**	**	**	**	*,**	*,**	*,**
Industrial	Breweries	312120	1,250	23,121	0.07%	*	0.15%	*	*	*	*	*
Industrial	Distilleries	312140	1,000	14,813	0.04%	*	*	*	*	*	*	*
Industrial	Tobacco Manufacturing	312230	1,500	14,813	0.00%	*	*	0.00%	0.00%	*	*	*
Industrial	Yarn Spinning Mills^	313111	500 (2007 Size Standards)	14,813	0.06%	*	*	*	*	*	*	*
Industrial	Thread Mills^	313113	500 (2007 Size Standards)	14,813	0.23%	*	*	*	*	*	*	*
Industrial	Broadwoven Fabric Mills	313210	1,000	23,121	0.17%	*	0.19%	0.05%	0.02%	*	*	*
Industrial	Narrow Fabric Mills^	313221	500 (2007 Size Standards)	14,813	0.23%	*	*	*	*	*	*	*
Industrial	Textile and Fabric Finishing Mills	313310	1,000	14,813	0.24%	*	0.12%	0.03%	*	*	*	*
Industrial	Broadwoven Fabric Finishing Mills^	313311	1,000 (2007 Size Standards)	23,121	0.34%	*	*	*	*	*	*	*
Industrial	Fabric Coating Mills	313320	1,000	19,949	0.15%	*	0.11%	*	*	*	*	*
Industrial	Tire Cord and Tire Fabric Mills^	314992	1,000 (2007 Size Standards)	14,813	0.02%	*	*	*	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Leather and Hide Tanning and Finishing	316110	500	9,943	0.12%	*	0.04%	0.02%	*	*	*
Industrial	Sawmills	321113	500	40,028	0.60%	2.97%	0.31%	0.08%	*	*	*
Industrial	Wood Preservation	321114	500	23,121	0.22%	*	0.09%	*	*	*	*
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	500	23,121	0.21%	*	*	0.05%	*	*	*
Industrial	Softwood Veneer and Plywood Manufacturing	321212	1,250	36,607	0.08%	*	*	0.05%	0.02%	*	*
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	750	61,489	0.71%	*	*	0.09%	*	*	*
Industrial	Reconstituted Wood Product Manufacturing	321219	750	31,907	0.11%	*	*	0.04%	*	*	*
Industrial	Wood Window and Door Manufacturing	321911	1,000	23,121	0.28%	*	*	0.05%	*	*	*
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	500	23,121	0.37%	1.55%	0.21%	*	*	*	*
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	500	23,121	0.77%	2.63%	0.25%	0.05%	*	*	*
Industrial	Pulp Mills	322110	750		**	*,**	*,**	**	**	*,**	*,**
Industrial	Paper (except Newsprint) Mills	322121	1,250		**	*,**	*,**	**	**	**	*,**
Industrial	Newsprint Mills	322122	750		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Paperboard Mills	322130	1,250		**	*,**	*,**	**	**	*,**	*,**
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	1,250	20,942	0.08%	0.64%	0.08%	0.03%	*	*	*
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	750		**	*,**	**	**	**	*,**	*,**
Industrial	Coated and Laminated Paper Manufacturing^	322222	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Sanitary Paper Product Manufacturing	322291	1,500		**	*,**	*,**	**	**	*,**	*,**
Industrial	All Other Converted Paper Product Manufacturing	322299	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Commercial Lithographic Printing^	323110	500 (2007 Size Standards)	14,813	0.38%	*	*	*	*	*	*
Industrial	Commercial Printing (except Screen and Books)	323111	500	16,953	0.51%	*	0.21%	0.04%	0.01%	*	*
Industrial	Books Printing	323117	1,250	23,121	0.25%	*	*	0.05%	0.02%	*	*
Industrial	Petroleum Refineries	324110	1,500	163,910	0.00%	*	0.06%	0.01%	*	0.00%	*
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	750		**	*,**	**	*,**	*,**	*,**	*,**

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Petrochemical Manufacturing	325110	1,000	6,423	0.00%	*	*	0.00%	*	*	*
Industrial	Industrial Gas Manufacturing	325120	1,000	14,813	0.09%	0.22%	0.06%	*	*	*	*
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1,000		**	*,**	**	**	*,**	*,**	*,**
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	1,000 (2007 Size Standards)	14,813	0.02%	*	*	*	*	*	*
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	1,000	20,351	0.04%	*	0.04%	0.01%	0.00%	*	*
Industrial	Alkalies and Chlorine Manufacturing^	325181	1,000 (2007 Size Standards)	17,883	0.01%	*	*	*	*	*	*
Industrial	Carbon Black Manufacturing^	325182	500 (2007 Size Standards)	11,921	0.01%	*	*	*	*	*	*
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	1,000 (2007 Size Standards)	9,186	0.02%	*	*	*	*	*	*
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Ethyl Alcohol Manufacturing	325193	1,000	23,121	0.01%	*	0.01%	0.00%	*	*	*
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	All Other Basic Organic Chemical Manufacturing	325199	1,250	48,147	0.04%	*	0.08%	0.02%	0.00%	0.00%	*
Industrial	Plastics Material and Resin Manufacturing	325211	1,250	147,326	0.18%	*	0.34%	0.04%	0.01%	0.01%	*
Industrial	Synthetic Rubber Manufacturing	325212	1,000	2,886	0.00%	*	0.01%	*	*	*	*
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	1,000	23,121	0.03%	*	0.10%	0.02%	0.00%	*	*
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	1,000 (2007 Size Standards)	102,067	0.16%	*	*	*	*	*	*
Industrial	Nitrogenous Fertilizer Manufacturing	325311	1,000	48,699	0.09%	*	0.09%	*	*	*	*
Industrial	Phosphatic Fertilizer Manufacturing	325312	750	23,121	0.01%	*	*	*	*	*	*
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	1,000	55,357	0.07%	*	0.09%	0.02%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Medicinal and Botanical Manufacturing	325411	1,000	14,813	0.05%	*	0.09%	0.02%	0.00%	*	*
Industrial	Pharmaceutical Preparation Manufacturing	325412	1,250	120,755	0.10%	*	*	0.04%	0.02%	0.01%	*
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1,250		**	*,**	*,**	**	**	**	*,**
Industrial	Paint and Coating Manufacturing	325510	1,000	120,796	0.56%	*	0.40%	0.09%	*	*	*
Industrial	Adhesive Manufacturing	325520	500	14,813	0.06%	0.35%	0.05%	0.01%	*	*	*
Industrial	Surface Active Agent Manufacturing	325613	750		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Toilet Preparation Manufacturing	325620	1,250		**	**	**	**	**	**	*,**
Industrial	Explosives Manufacturing	325920	750		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Custom Compounding of Purchased Resins	325991	500	23,121	0.10%	*	0.08%	0.02%	*	*	*
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	1,500	14,813	0.05%	*	0.07%	0.01%	*	*	*
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	500	20,351	0.11%	0.65%	0.07%	0.02%	0.01%	*	*
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	1,000	61,489	0.19%	1.97%	0.30%	0.08%	*	*	*
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	750	36,806	0.12%	*	0.17%	0.04%	0.01%	*	*
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	500	14,813	0.09%	*	0.12%	0.03%	*	*	*
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	750	14,813	0.07%	0.34%	0.06%	0.02%	*	*	*
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	500	52,154	0.34%	*	0.33%	*	*	*	*
Industrial	Polystyrene Foam Product Manufacturing	326140	1,000	14,813	0.07%	*	0.09%	0.02%	0.01%	*	*
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	750	5,478	0.04%	*	0.03%	0.01%	*	*	*
Industrial	Plastics Plumbing Fixture Manufacturing	326191	750	23,121	0.30%	*	0.24%	*	*	*	*
Industrial	All Other Plastics Product Manufacturing	326199	750	37,478	0.29%	2.51%	0.33%	0.07%	0.02%	0.01%	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Tire Manufacturing (except Retreading)	326211	1,500	35,057	0.02%	*	*	0.02%	0.01%	0.00%	*
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	750	61,489	0.29%	*	*	0.09%	0.04%	*	*
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	750	23,121	0.14%	*	*	0.04%	0.01%	*	*
Industrial	All Other Rubber Product Manufacturing	326299	500	40,882	0.25%	2.07%	0.28%	0.06%	*	*	*
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	1,000	16,148	0.48%	*	0.24%	0.04%	*	*	*
Industrial	Clay Building Material and Refractories Manufacturing	327120	750	23,121	0.25%	1.43%	0.22%	0.05%	*	*	*
Industrial	Clay Refractory Manufacturing^	327124	500 (2007 Size Standards)	22,421	0.24%	*	*	*	*	*	*
Industrial	Flat Glass Manufacturing	327211	1,000	23,121	0.04%	*	*	*	*	*	*
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	1,250	34,874	0.40%	*	*	*	0.02%	*	*
Industrial	Cement Manufacturing	327310	1,000	61,489	0.24%	*	*	*	*	*	*
Industrial	Lime Manufacturing	327410	750	22,485	0.09%	*	*	*	*	*	*
Industrial	Gypsum Product Manufacturing	327420	1,500	14,813	0.08%	*	0.05%	*	*	*	*
Industrial	Abrasive Product Manufacturing	327910	750	23,121	0.13%	1.03%	0.15%	0.02%	0.00%	*	*
Industrial	Mineral Wool Manufacturing	327993	1,500	51,915	0.28%	*	0.38%	0.06%	*	*	*
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	500	23,121	0.25%	*	0.15%	*	*	*	*
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	1,500	32,304	0.01%	*	*	0.01%	0.00%	0.00%	*
Industrial	Iron and Steel Mills^	331111	1,000 (2007 Size Standards)	21,459	0.01%	*	*	*	*	*	*
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	1,000	23,121	0.03%	0.47%	0.08%	0.02%	0.01%	0.00%	*
Industrial	Rolled Steel Shape Manufacturing	331221	1,000	23,121	0.07%	*	0.07%	*	*	*	*
Industrial	Primary Aluminum Production^	331312	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Alumina Refining and Primary Aluminum Production	331313	1,000	14,813	0.01%	*	0.03%	0.01%	0.00%	*	*
Industrial	Secondary Smelting and Alloying of Aluminum	331314	750	7,628	0.01%	*	0.02%	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	1,250	23,121	0.01%	*	*	0.01%	0.00%	*	*
Industrial	Aluminum Extruded Product Manufacturing^	331316	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	750		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1,000		**	*,**	**	*,**	**	*,**	*,**
Industrial	Primary Smelting and Refining of Copper^	331411	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	750	14,813	0.06%	*	0.07%	0.02%	*	*	*
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Iron Foundries	331511	1,000	28,299	0.10%	*	*	0.05%	0.01%	*	*
Industrial	Steel Foundries (except Investment)	331513	500		**	*,**	**	**	**	*,**	*,**
Industrial	Aluminum Die-Casting Foundries^	331521	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Aluminum Foundries (except Die-Casting)	331524	500		**	*,**	**	**	*,**	*,**	*,**
Industrial	Nonferrous Forging	332112	750	14,813	0.03%	*	*	0.02%	0.00%	*	*
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	500	14,813	0.18%	1.09%	0.15%	0.03%	0.01%	*	*
Industrial	Hand and Edge Tool Manufacturing^	332212	500 (2007 Size Standards)	14,813	0.25%	*	*	*	*	*	*
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	750	14,813	0.15%	*	0.11%	0.03%	*	*	*
Industrial	Fabricated Structural Metal Manufacturing	332312	500	14,813	0.17%	*	0.11%	0.02%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Metal Window and Door Manufacturing	332321	750	55,477	0.59%	*	0.55%	0.12%	0.04%	*	*
Industrial	Sheet Metal Work Manufacturing	332322	500	14,813	0.29%	1.12%	0.17%	0.04%	*	*	*
Industrial	Metal Can Manufacturing	332431	1,500	43,299	0.05%	*	0.08%	0.03%	*	*	*
Industrial	Other Metal Container Manufacturing	332439	500	20,351	0.19%	1.50%	0.13%	0.04%	0.01%	*	*
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	500	14,813	0.12%	1.01%	0.12%	0.03%	0.01%	*	*
Industrial	Metal Heat Treating	332811	750	14,813	0.18%	*	0.17%	*	*	*	*
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	500	42,124	0.79%	5.21%	0.42%	0.05%	*	*	*
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	500	20,351	0.66%	2.59%	0.35%	*	*	*	*
Industrial	Other Fabricated Metal Manufacturing	332990	NA	14,813	*	*	*	*	*	*	*
Industrial	Small Arms Ammunition Manufacturing	332992	1,250	14,813	0.04%	*	*	*	*	*	*
Industrial	Ammunition (except Small Arms) Manufacturing	332993	1,500	20,351	0.03%	*	*	*	*	*	*
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	750	20,351	0.51%	2.36%	0.26%	0.05%	0.01%	*	*
Industrial	Farm Machinery and Equipment Manufacturing	333111	1,250	55,477	0.17%	*	0.43%	0.06%	0.01%	0.01%	*
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1,500	14,813	0.03%	*	*	0.01%	0.00%	*	*
Industrial	Construction Machinery Manufacturing	333120	1,250	80,054	0.14%	*	0.54%	0.08%	0.01%	0.00%	*
Industrial	Mining Machinery and Equipment Manufacturing	333131	500	23,121	0.09%	*	0.16%	0.02%	*	*	*
Industrial	Printing Machinery and Equipment Manufacturing [^]	333293	500 (2007 Size Standards)	14,813	0.27%	*	*	*	*	*	*
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1,000	14,813	0.15%	*	0.11%	*	*	*	*
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1,250	14,813	0.04%	0.82%	0.11%	0.02%	0.01%	0.00%	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	500 (2007 Size Standards)	14,813	0.09%	*	*	*	*	*	*
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	500 (2007 Size Standards)	14,813	0.11%	*	*	*	*	*	*
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1,500	14,813	0.02%	*	*	0.02%	0.00%	0.00%	*
Industrial	Other Engine Equipment Manufacturing	333618	1,500	61,489	0.07%	2.54%	0.30%	0.04%	0.01%	0.00%	*
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1,250	14,813	0.05%	*	0.10%	0.02%	*	*	*
Industrial	Welding and Soldering Equipment Manufacturing	333992	1,250	23,121	0.13%	1.47%	0.15%	0.03%	*	0.00%	*
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1,250	14,813	0.04%	0.69%	0.09%	0.01%	0.01%	0.00%	0.00%
Industrial	Electron Tube Manufacturing^	334411	750 (2007 Size Standards)	14,813	0.09%	*	*	*	*	*	*
Industrial	Bare Printed Circuit Board Manufacturing	334412	750	14,813	0.18%	*	0.18%	0.04%	*	*	*
Industrial	Semiconductor and Related Device Manufacturing	334413	1,250	39,548	0.07%	*	0.13%	0.05%	0.01%	0.00%	*
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	500	14,813	0.16%	*	0.14%	*	0.01%	*	*
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	1,000		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1,250	14,813	0.05%	*	*	0.03%	*	*	*
Industrial	Household Laundry Equipment Manufacturing	335224	1,250	28,514	*	*	*	*	*	*	*
Industrial	Other Major Household Appliance Manufacturing	335228	1,000	23,121	0.01%	*	*	*	0.01%	*	*
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	750	14,813	0.06%	*	0.11%	0.02%	0.01%	*	*
Industrial	Motor and Generator Manufacturing	335312	1,250	23,121	0.09%	*	0.21%	0.03%	*	*	*
Industrial	Storage Battery Manufacturing	335911	1,250	14,813	0.03%	*	*	0.02%	0.01%	*	*
Industrial	Current-Carrying Wiring Device Manufacturing	335931	500	14,813	0.09%	*	0.13%	0.03%	0.01%	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1,000	14,813	0.04%	*	0.07%	0.02%	*	*	*
Industrial	Carbon and Graphite Product Manufacturing	335991	750	55,477	0.23%	*	0.35%	0.07%	*	*	*
Industrial	Automobile Manufacturing	336111	1,500	40,753	0.01%	*	*	*	*	0.00%	0.00%
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	1,500	61,489	0.00%	*	*	0.12%	*	*	0.00%
Industrial	Heavy Duty Truck Manufacturing	336120	1,500	48,699	0.01%	*	*	*	0.01%	0.00%	*
Industrial	Motor Vehicle Body Manufacturing	336211	1,000	48,699	0.31%	*	0.45%	0.08%	0.02%	*	*
Industrial	Truck Trailer Manufacturing	336212	1,000	14,813	0.08%	*	0.14%	0.02%	0.01%	*	*
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	1,000	23,121	0.06%	*	0.18%	0.03%	0.00%	*	*
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	500 (2007 Size Standards)	14,813	0.06%	*	*	*	*	*	*
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	750 (2007 Size Standards)	23,121	0.06%	*	*	*	*	*	*
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	1,000	23,121	0.05%	*	0.13%	0.02%	0.01%	*	*
Industrial	Motor Vehicle Brake System Manufacturing	336340	1,250	14,813	0.03%	*	0.06%	0.01%	0.01%	*	*
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	1,500	23,121	0.03%	*	0.09%	0.02%	0.01%	0.00%	*
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1,500	14,813	0.03%	*	0.07%	0.01%	0.00%	*	*
Industrial	Motor Vehicle Metal Stamping	336370	1,000	14,813	0.04%	0.71%	0.10%	0.02%	0.01%	0.00%	*
Industrial	Other Motor Vehicle Parts Manufacturing	336390	1,000	39,250	0.10%	1.49%	0.19%	0.04%	0.01%	0.01%	*
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	750 (2007 Size Standards)	23,121	0.06%	*	*	*	*	*	*
Industrial	Aircraft Manufacturing	336411	1,500	101,296	0.02%	*	1.02%	0.11%	0.03%	0.01%	0.00%
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	1,500	48,699	0.06%	2.41%	0.37%	0.05%	0.01%	0.01%	0.00%
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	1,250	48,699	0.12%	*	0.36%	0.07%	0.02%	*	0.00%
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1,250	14,813	0.01%	*	*	*	*	0.00%	*
Industrial	Railroad Rolling Stock Manufacturing	336510	1,500	14,813	0.02%	*	0.06%	0.01%	0.00%	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Ship Building and Repairing	336611	1,250	47,967	0.13%	3.23%	0.45%	0.08%	0.03%	0.01%	0.00%
Industrial	Boat Building	336612	1,000	80,875	0.97%	*	0.79%	0.13%	0.06%	*	*
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	1,500	23,121	0.02%	*	*	0.03%	*	*	*
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	750	14,036	0.86%	*	*	0.04%	0.01%	*	*
Industrial	Upholstered Household Furniture Manufacturing	337121	1,000	23,121	0.26%	*	*	0.07%	0.02%	*	*
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	750	38,468	2.19%	*	0.68%	0.13%	*	*	*
Industrial	Institutional Furniture Manufacturing	337127	500	14,813	0.22%	*	0.20%	0.04%	*	*	*
Industrial	Wood Office Furniture Manufacturing	337211	1,000	61,489	0.87%	*	0.86%	0.13%	*	*	*
Industrial	Office Furniture (except Wood) Manufacturing	337214	1,000	30,639	0.09%	*	0.35%	0.05%	0.01%	*	*
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	500	14,813	0.24%	*	0.18%	0.04%	0.01%	*	*
Industrial	Blind and Shade Manufacturing	337920	1,000	14,813	0.29%	*	0.18%	0.04%	*	*	*
Industrial	Surgical and Medical Instrument Manufacturing	339112	1,000	23,121	0.08%	*	*	0.03%	0.01%	0.00%	*
Industrial	Surgical Appliance and Supplies Manufacturing	339113	750	14,813	0.08%	*	*	0.02%	0.00%	0.00%	*
Industrial	Jewelry and Silverware Manufacturing	339910	500	14,813	0.39%	2.23%	0.16%	*	*	*	*
Industrial	Sporting and Athletic Goods Manufacturing	339920	750	14,813	0.23%	2.00%	0.14%	0.02%	0.01%	0.00%	*
Industrial	Office Supplies (except Paper) Manufacturing	339940	750	14,813	0.27%	*	0.17%	0.02%	*	*	*
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	500	23,121	0.19%	*	0.21%	0.04%	0.02%	*	*
Industrial	Burial Casket Manufacturing	339995	1,000	23,121	0.34%	*	*	*	*	*	*
Industrial	All Other Miscellaneous Manufacturing	339999	500	61,489	3.02%	12.05%	0.91%	0.08%	*	*	*
Commercial	Grain and Field Bean Merchant Wholesalers	424510	200	14,813	0.03%	0.06%	0.01%	*	*	*	*
Commercial	Petroleum Bulk Stations and Terminals	424710	200	61,489	0.03%	0.09%	0.02%	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Commercial	Scheduled Passenger Air Transportation	481111	1,500	23,121	0.03%	0.46%	0.09%	*	*	*	*
Commercial	Line-Haul Railroads	482111	1,500	14,813	*	*	*	*	*	*	*
Energy	Pipeline Transportation of Crude Oil	486110	1,500	14,813	0.14%	0.36%	0.06%	*	*	*	*
Energy	Pipeline Transportation of Natural Gas	486210	\$27.5 million	14,041	0.13%	0.30%	0.04%	*	*	*	*
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1,500	14,813	0.13%	0.44%	*	*	*	*	*
Commercial	Support Activities for Rail Transportation	488210	\$15 million	23,121	0.59%	2.09%	0.33%	*	*	*	*
Commercial	Marine Cargo Handling	488320	\$38.5 million	23,121	0.12%	0.77%	0.12%	*	*	*	*
Commercial	General Warehousing and Storage	493110	\$27.5 million	25,266	1.42%	2.92%	0.89%	*	*	*	*
Commercial	Other Warehousing and Storage	493190	\$27.5 million	23,121	0.93%	3.39%	0.67%	*	*	*	*
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	\$27.5 million	14,813	0.51%	0.86%	0.06%	*	*	*	*
Commercial	Testing Laboratories	541380	\$15 million	23,121	0.96%	2.68%	0.41%	*	*	*	*
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	1,000	23,121	*	*	*	*	*	*	*
Commercial	All Other Support Services	561990	\$11 million	14,813	0.94%	2.00%	0.29%	*	*	*	*
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	\$38.5 million	85,781	1.05%	5.03%	0.75%	*	*	*	*
Waste Treatment	Solid Waste Landfill	562212	\$38.5 million	90,616	2.17%	4.22%	0.68%	*	*	*	*
Waste Treatment	Solid Waste Combustors and Incinerators	562213	\$38.5 million	23,121	0.10%	*	0.07%	*	*	*	*
Waste Treatment	Remediation Services	562910	\$20.5 million	14,813	0.41%	1.30%	0.21%	*	*	*	*
Educational Services	Colleges, Universities, and Professional Schools	611310	\$27.5 million	46,185	*	*	*	*	*	*	*
Commercial	Amusement and Theme Parks	713110	\$38.5 million	14,813	0.05%	0.63%	0.20%	*	*	*	*
Commercial	Linen and Uniform Supply	812330	NA	14,813	*	*	*	*	*	*	*
Commercial	Industrial Launderers	812332	\$38.5 million	23,121	0.41%	1.55%	0.38%	*	*	*	*

Notes:

Blanks in “Average Avoided Cost/Entity” column are for NAICS where zero facilities are projected to obtain area source status. NA means it is not a valid 2012 NAICS code thus SBA Size Standards are not available.

*No receipts data available from Census; cost-to-sales ratios cannot be calculated.

**Zero facilities projected to obtain area source status and no projected net costs (savings); cost-to-sales ratios cannot be calculated.

*,**Denotes the data status as a combination of footnotes * and **.

Sources: 2012 Economic Census, 2012 County Business Patterns, 2017 SBA Size Standards, Federal Reserve Bank of St. Louis Economic Research, Eastern Research Group..
Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. t Memorandum for U.S. EPA/OAQPS/SPPD. May, 2019. SBA February
2016 Size Standards, SBA 2007 Size Standards.

6.4 Implementing the Sales Test to Measure Impacts on Industrial, Commercial and Other Sources under Alternative Scenario 1

For the first alternative scenario with a threshold of 50%, the year 1 avoided costs-to-sales ratios are reported in Table 6-6, and the year 2 avoided cost-to-sales ratios are reported in Table 6-7. The year 1 avoided cost-to-sales ratios range from -0.01% to 4.67%, with a median avoided cost-to-sales ratio of 0.04% across all employment size categories. The twenty-fifth percentile and seventy-fifth percentile avoided cost-to-sales ratio in year 1 are 0.01% and 0.14% respectively across all employment size categories. The year 2 avoided cost-to-sales ratios range from less than 0.01% to 5.16%, with a median avoided cost-to-sales ratio of 0.06% across all employment size categories. The twenty-fifth percentile and seventy-fifth percentile avoided cost-to-sales ratio in year 2 are 0.03% and 0.23% respectively across all employment size categories.

Because facilities do not face permitting costs in year 2, the cost savings are larger and the resulting avoided cost-to-sales ratios are higher in year 2 than year 1. For example, NAICS 493110 (General Warehousing and Storage) has an overall year 1 avoided cost-to-sales ratio of 1.14% and an overall year 2 avoided cost-to-sales ratio of 1.42%. Three NAICS codes, 324110 (Petroleum Refineries), 325110 (Petrochemical Manufacturing), and 336112 (Light Truck and Utility Vehicle Manufacturing), have less than 0.01% overall avoided cost-to-sales ratios in both year 1 and year 2. NAICS 326150 (Urethane and Other Foam Product [except Polystyrene] Manufacturing) is the only NAICS code to have a negative avoided cost-to-sales ratio (-0.01%) in year 1, but in year 2, its avoided cost-to-sales ratio is positive (0.02%).

Like the primary scenario, we conducted a small entity analysis for both year 1 and year 2 impact estimates for the alternative scenario 1. In year 1, some small size categories have low avoided cost-to-sales ratios. NAICS 424710 (Petroleum Bulk Stations and Terminals) has an avoided cost-to-sales ratio of 0.02% for the “fewer than or equal to 19 employees” category and 0.01% for the “20 to 99 employees” category in year 1. However, there are cases of larger positive economic impacts for small size categories in years 1 and 2. NAICS 339999 (All Other Miscellaneous Manufacturing) has an avoided cost-to-sales ratio of 3.56% for the “fewer than or equal to 19 employees” category in year 1, and NAICS 493190 (Other Warehousing and Storage) has a year 2 avoided cost-to-sales ratio of 3.39% for the same size category. As

explained previously, establishments in the “fewer than or equal to 19 employees” size category for NAICS 493190 are considered small businesses for purposes of this analysis based on the SBA size standard for this NAICS code.

Table 6-6 Avoided Cost to Sales in Year 1 under the Alternative Scenario 1

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	\$27.5 million		*,**	*,**	*,**	*,**	*,**	*,**	*,**
Energy	Crude Petroleum and Natural Gas Extraction	211111	1,250 (Feb 2016 Size Standards)	5,875	0.01%	*	0.01%	0.00%	0.00%	0.00%	*
Energy	Natural Gas Liquid Extraction	211112	750 (Feb 2016 Size Standards)	31,350	0.03%	0.05%	0.02%	0.01%	0.00%	*	*
Industrial	Iron Ore Mining	212210	750	9,845	0.00%	*	0.07%	0.00%	*	*	*
Industrial	Lead Ore and Zinc Ore Mining	212231	750 (Feb 2016 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Copper Ore and Nickel Ore Mining	212234	1,500 (Feb 2016 Size Standards)		**	*,**	*,**	*,**	**	*,**	*,**
Industrial	All Other Metal Ore Mining	212299	750		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Industrial Sand Mining	212322	500	9,845	0.08%	0.24%	0.05%	0.01%	*	*	*
Industrial	Kaolin and Ball Clay Mining	212324	750	9,845	0.03%	*	0.08%	0.01%	*	*	*
Industrial	Potash, Soda, and Borate Mineral Mining	212391	750	18,153	0.02%	*	*	*	0.00%	*	*
Industrial	All Other Nonmetallic Mineral Mining	212399	500		**	*,**	**	*,**	*,**	*,**	*,**
Energy	Support Activities for Oil and Gas Operations	213112	\$38.5 million	9,845	0.11%	0.46%	0.10%	0.02%	0.00%	0.00%	*
Utilities	Hydroelectric Power Generation	221111	500		**	*,**	*,**	*,**	*,**	*,**	*,**
Utilities	Fossil Fuel Electric Power Generation	221112	750	35,267	0.06%	*	*	*	*	*	*
Utilities	Biomass Electric Power Generation	221117	250	18,153	0.26%	*	*	*	*	*	*
Utilities	Other Electric Power Generation	221118	250		**	*,**	*,**	*,**	*,**	*,**	*,**
Utilities	Other Electric Power Generation^	221119	4 million MWH (2007 Size Standards)	15,383	0.15%	*	*	*	*	*	*
Utilities	Electric Power Distribution	221122	1,000		**	*,**	*,**	*,**	*,**	*,**	*,**
Utilities	Natural Gas Distribution	221210	1,000	16,491	0.04%	*	*	*	*	*	*
Utilities	Water Supply and Irrigation Systems	221310	\$27.5 million		**	*,**	*,**	*,**	*,**	*,**	*,**
Utilities	Sewage Treatment Facilities	221320	\$20.5 million	2,664	0.13%	*	*	*	*	*	*
Utilities	Steam and Air-Conditioning Supply	221330	\$15 million	34,282	0.22%	*	*	*	*	*	*
Industrial	Other Animal Food Manufacturing	311119	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Wet Corn Milling	311221	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	Soybean Processing^	311222	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Other Oilseed Processing^	311223	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Soybean and Other Oilseed Processing	311224	1,000	32,362	0.01%	*	0.01%	*	*	*	*
Industrial	Fats and Oils Refining and Blending	311225	1,000		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Beet Sugar Manufacturing	311313	750		**	*,**	*,**	*,**	**	*,**	*,**
Industrial	Cane Sugar Manufacturing	311314	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Fruit and Vegetable Canning	311421	1,000		**	*,**	**	**	*,**	*,**	*,**
Industrial	Specialty Canning	311422	1,250		**	*,**	*,**	*,**	**	*,**	*,**
Industrial	Cheese Manufacturing	311513	1,250		**	**	**	**	**	**	*,**
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Rendering and Meat Byproduct Processing	311613	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Commercial Bakeries	311812	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Other Snack Food Manufacturing	311919	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	Coffee and Tea Manufacturing	311920	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Spice and Extract Manufacturing	311942	500		**	*,**	**	**	*,**	*,**	*,**
Industrial	All Other Miscellaneous Food Manufacturing	311999	500		**	*,**	**	**	**	*,**	*,**
Industrial	Breweries	312120	1,250	9,845	0.03%	*	0.06%	*	*	*	*
Industrial	Distilleries	312140	1,000		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Tobacco Manufacturing	312230	1,500		**	*,**	*,**	**	**	*,**	*,**
Industrial	Yarn Spinning Mills^	313111	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Thread Mills^	313113	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Broadwoven Fabric Mills	313210	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Narrow Fabric Mills^	313221	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Textile and Fabric Finishing Mills	313310	1,000		**	*,**	**	**	*,**	*,**	*,**
Industrial	Broadwoven Fabric Finishing Mills^	313311	1000 (2007 Size Standards)	9,845	0.14%	*	*	*	*	*	*
Industrial	Fabric Coating Mills	313320	1,000	9,392	0.07%	*	0.05%	*	*	*	*
Industrial	Tire Cord and Tire Fabric Mills^	314992	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Leather and Hide Tanning and Finishing	316110	500	4,975	0.06%	*	0.02%	0.01%	*	*	*
Industrial	Sawmills	321113	500	35,266	0.53%	2.62%	0.27%	0.07%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Wood Preservation	321114	500	18,153	0.17%	*	0.07%	*	*	*	*
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	500	18,153	0.17%	*	*	0.04%	*	*	*
Industrial	Softwood Veneer and Plywood Manufacturing	321212	1,250	35,790	0.08%	*	*	0.04%	0.02%	*	*
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	750	56,521	0.65%	*	*	0.09%	*	*	*
Industrial	Reconstituted Wood Product Manufacturing	321219	750	26,622	0.09%	*	*	0.03%	*	*	*
Industrial	Wood Window and Door Manufacturing	321911	1,000	18,153	0.22%	*	*	0.04%	*	*	*
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	500	18,153	0.29%	1.22%	0.16%	*	*	*	*
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	500	18,153	0.61%	2.07%	0.20%	0.04%	*	*	*
Industrial	Pulp Mills	322110	750		**	*,**	*,**	**	**	*,**	*,**
Industrial	Paper (except Newsprint) Mills	322121	1,250		**	*,**	*,**	**	**	**	*,**
Industrial	Newsprint Mills	322122	750		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Paperboard Mills	322130	1,250		**	*,**	*,**	**	**	*,**	*,**
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	1,250	16,681	0.06%	0.51%	0.07%	0.02%	*	*	*
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	750		**	*,**	**	**	**	*,**	*,**
Industrial	Coated and Laminated Paper Manufacturing^	322222	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Sanitary Paper Product Manufacturing	322291	1,500		**	*,**	*,**	**	**	*,**	*,**
Industrial	All Other Converted Paper Product Manufacturing	322299	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Commercial Lithographic Printing^	323110	500 (2007 Size Standards)	9,845	0.25%	*	*	*	*	*	*
Industrial	Commercial Printing (except Screen and Books)	323111	500	12,300	0.37%	*	0.15%	0.03%	0.01%	*	*
Industrial	Books Printing	323117	1,250	18,153	0.20%	*	*	0.04%	0.02%	*	*
Industrial	Petroleum Refineries	324110	1,500	164,509	0.00%	*	0.06%	0.01%	*	0.00%	*
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	750		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Petrochemical Manufacturing	325110	1,000	1,265	0.00%	*	*	0.00%	*	*	*
Industrial	Industrial Gas Manufacturing	325120	1,000	9,845	0.06%	0.15%	0.04%	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1,000		**	*, **	**	**	*, **	*, **	*, **
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	1,000 (2007 Size Standards)	9,845	0.01%	*	*	*	*	*	*
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	750 (2007 Size Standards)		**	*, **	*, **	*, **	*, **	*, **	*, **
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	1,000	18,153	0.03%	*	0.04%	0.01%	0.00%	*	*
Industrial	Alkalies and Chlorine Manufacturing^	325181	1,000 (2007 Size Standards)	10,834	0.01%	*	*	*	*	*	*
Industrial	Carbon Black Manufacturing^	325182	500 (2007 Size Standards)	6,517	0.01%	*	*	*	*	*	*
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	1,000 (2007 Size Standards)	4,042	0.01%	*	*	*	*	*	*
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	750 (2007 Size Standards)		**	*, **	*, **	*, **	*, **	*, **	*, **
Industrial	Ethyl Alcohol Manufacturing	325193	1,000	18,153	0.01%	*	0.01%	0.00%	*	*	*
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	1,250		**	*, **	**	**	*, **	*, **	*, **
Industrial	All Other Basic Organic Chemical Manufacturing	325199	1,250	48,184	0.04%	*	0.08%	0.02%	0.00%	0.00%	*
Industrial	Plastics Material and Resin Manufacturing	325211	1,250	142,533	0.17%	*	0.33%	0.04%	0.01%	0.01%	*
Industrial	Synthetic Rubber Manufacturing	325212	1,000	(757)	0.00%	*	0.00%	*	*	*	*
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	1,000	18,153	0.03%	*	0.08%	0.01%	0.00%	*	*
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1,000 (2007 Size Standards)		**	*, **	*, **	*, **	*, **	*, **	*, **
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	1,000 (2007 Size Standards)	111,371	0.18%	*	*	*	*	*	*
Industrial	Nitrogenous Fertilizer Manufacturing	325311	1,000	56,521	0.11%	*	0.10%	*	*	*	*
Industrial	Phosphatic Fertilizer Manufacturing	325312	750	18,153	0.01%	*	*	*	*	*	*
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	1,000	34,171	0.05%	*	0.06%	0.01%	*	*	*
Industrial	Medicinal and Botanical Manufacturing	325411	1,000	9,845	0.03%	*	0.06%	0.01%	0.00%	*	*
Industrial	Pharmaceutical Preparation Manufacturing	325412	1,250	114,785	0.09%	*	*	0.03%	0.02%	0.01%	*
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1,250		**	*, **	*, **	**	**	**	*, **
Industrial	Paint and Coating Manufacturing	325510	1,000	114,766	0.54%	*	0.38%	0.08%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Adhesive Manufacturing	325520	500	9,845	0.04%	0.24%	0.03%	0.01%	*	*	*
Industrial	Surface Active Agent Manufacturing	325613	750		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Toilet Preparation Manufacturing	325620	1,250		**	**	**	**	**	**	*,**
Industrial	Explosives Manufacturing	325920	750		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Custom Compounding of Purchased Resins	325991	500	18,153	0.08%	*	0.07%	0.01%	*	*	*
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	1,500	9,845	0.03%	*	0.05%	0.01%	*	*	*
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	500	18,153	0.10%	0.58%	0.06%	0.02%	0.01%	*	*
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	1,000	18,153	0.06%	0.58%	0.09%	0.02%	*	*	*
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	750	38,891	0.13%	*	0.18%	0.04%	0.01%	*	*
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	500		**	*,**	**	**	*,**	*,**	*,**
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	750		**	**	**	**	*,**	*,**	*,**
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	500	15,383	0.10%	*	0.10%	*	*	*	*
Industrial	Polystyrene Foam Product Manufacturing	326140	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	750	(1,565)	-0.01%	*	-0.01%	0.00%	*	*	*
Industrial	Plastics Plumbing Fixture Manufacturing	326191	750		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	All Other Plastics Product Manufacturing	326199	750	31,766	0.24%	2.12%	0.28%	0.06%	0.02%	0.01%	*
Industrial	Tire Manufacturing (except Retreading)	326211	1,500	33,816	0.02%	*	*	0.02%	0.01%	0.00%	*
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	750	18,153	0.09%	*	*	0.03%	0.01%	*	*
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	750		**	*,**	*,**	**	**	*,**	*,**
Industrial	All Other Rubber Product Manufacturing	326299	500	16,491	0.10%	0.83%	0.11%	0.02%	*	*	*
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	1,000	23,327	0.70%	*	0.34%	0.06%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	750	9,845	0.04%	*	0.04%	0.01%	*	*	*
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Iron Foundries	331511	1,000	23,657	0.08%	*	*	0.04%	0.01%	*	*
Industrial	Steel Foundries (except Investment)	331513	500		**	*,**	**	**	**	*,**	*,**
Industrial	Aluminum Die-Casting Foundries^	331521	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Aluminum Foundries (except Die-Casting)	331524	500		**	*,**	**	**	*,**	*,**	*,**
Industrial	Nonferrous Forging	332112	750	9,845	0.02%	*	*	0.01%	0.00%	*	*
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	500	9,845	0.12%	0.73%	0.10%	0.02%	0.01%	*	*
Industrial	Hand and Edge Tool Manufacturing^	332212	500 (2007 Size Standards)	9,845	0.17%	*	*	*	*	*	*
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	750	9,845	0.10%	*	0.07%	0.02%	*	*	*
Industrial	Fabricated Structural Metal Manufacturing	332312	500	9,845	0.11%	*	0.08%	0.02%	*	*	*
Industrial	Metal Window and Door Manufacturing	332321	750	56,521	0.60%	*	0.56%	0.12%	0.04%	*	*
Industrial	Sheet Metal Work Manufacturing	332322	500	9,845	0.19%	0.75%	0.11%	0.03%	*	*	*
Industrial	Metal Can Manufacturing	332431	1,500	42,400	0.05%	*	0.08%	0.03%	*	*	*
Industrial	Other Metal Container Manufacturing	332439	500	18,153	0.17%	1.34%	0.12%	0.04%	0.01%	*	*
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	500	9,845	0.08%	0.67%	0.08%	0.02%	0.01%	*	*
Industrial	Metal Heat Treating	332811	750	9,845	0.12%	*	0.12%	*	*	*	*
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	500	36,793	0.69%	4.55%	0.37%	0.05%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	500	18,153	0.59%	2.31%	0.31%	*	*	*	*
Industrial	Other Fabricated Metal Manufacturing	332990	NA	9,845	*	*	*	*	*	*	*
Industrial	Small Arms Ammunition Manufacturing	332992	1,250	9,845	0.03%	*	*	*	*	*	*
Industrial	Ammunition (except Small Arms) Manufacturing	332993	1,500	18,153	0.03%	*	*	*	*	*	*
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	750	18,153	0.46%	2.11%	0.23%	0.04%	0.01%	*	*
Industrial	Farm Machinery and Equipment Manufacturing	333111	1,250	15,383	0.05%	*	0.12%	0.02%	0.00%	0.00%	*
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1,500		**	*,**	*,**	**	**	*,**	*,**
Industrial	Construction Machinery Manufacturing	333120	1,250	72,138	0.13%	*	0.48%	0.07%	0.01%	0.00%	*
Industrial	Mining Machinery and Equipment Manufacturing	333131	500		**	*,**	**	**	*,**	*,**	*,**
Industrial	Printing Machinery and Equipment Manufacturing^	333293	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1,000		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1,250		**	**	**	**	**	**	*,**
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1,500		**	*,**	*,**	**	**	**	*,**
Industrial	Other Engine Equipment Manufacturing	333618	1,500	18,153	0.02%	0.75%	0.09%	0.01%	0.00%	0.00%	*
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	Welding and Soldering Equipment Manufacturing	333992	1,250		**	**	**	**	*,**	**	*,**

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1,250		**	**	**	**	**	**	**
Industrial	Electron Tube Manufacturing [^]	334411	750 (2007 Size Standards)		**	*, **	*, **	*, **	*, **	*, **	*, **
Industrial	Bare Printed Circuit Board Manufacturing	334412	750		**	*, **	**	**	*, **	*, **	*, **
Industrial	Semiconductor and Related Device Manufacturing	334413	1,250	34,273	0.06%	*	0.11%	0.04%	0.01%	0.00%	*
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	500		**	*, **	**	*, **	**	*, **	*, **
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	1,000		**	*, **	*, **	*, **	*, **	*, **	*, **
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1,250	9,845	0.03%	*	*	0.02%	*	*	*
Industrial	Household Laundry Equipment Manufacturing	335224	1,250	23,546	*	*	*	*	*	*	*
Industrial	Other Major Household Appliance Manufacturing	335228	1,000	18,153	0.01%	*	*	*	0.00%	*	*
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	750	9,845	0.04%	*	0.07%	0.01%	0.01%	*	*
Industrial	Motor and Generator Manufacturing	335312	1,250	18,153	0.07%	*	0.16%	0.02%	*	*	*
Industrial	Storage Battery Manufacturing	335911	1,250	9,845	0.02%	*	*	0.01%	0.01%	*	*
Industrial	Current-Carrying Wiring Device Manufacturing	335931	500	9,845	0.06%	*	0.09%	0.02%	0.00%	*	*
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1,000	9,845	0.03%	*	0.05%	0.01%	*	*	*
Industrial	Carbon and Graphite Product Manufacturing	335991	750	50,509	0.21%	*	0.32%	0.06%	*	*	*
Industrial	Automobile Manufacturing	336111	1,500	39,554	0.01%	*	*	*	*	0.00%	0.00%
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	1,500	56,521	0.00%	*	*	0.11%	*	*	0.00%
Industrial	Heavy Duty Truck Manufacturing	336120	1,500	50,509	0.01%	*	*	*	0.01%	0.00%	*
Industrial	Motor Vehicle Body Manufacturing	336211	1,000	50,509	0.32%	*	0.46%	0.09%	0.02%	*	*
Industrial	Truck Trailer Manufacturing	336212	1,000	9,845	0.05%	*	0.09%	0.02%	0.00%	*	*
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	1,000	18,153	0.05%	*	0.14%	0.02%	0.00%	*	*
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing [^]	336311	500 (2007 Size Standards)	9,845	0.04%	*	*	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	750 (2007 Size Standards)	18,153	0.05%	*	*	*	*	*	*
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	1,000	18,153	0.04%	*	0.10%	0.02%	0.01%	*	*
Industrial	Motor Vehicle Brake System Manufacturing	336340	1,250	9,845	0.02%	*	0.04%	0.01%	0.00%	*	*
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	1,500	18,153	0.03%	*	0.07%	0.01%	0.01%	0.00%	*
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1,500	9,845	0.02%	*	0.05%	0.01%	0.00%	*	*
Industrial	Motor Vehicle Metal Stamping	336370	1,000	9,845	0.03%	0.47%	0.06%	0.01%	0.00%	0.00%	*
Industrial	Other Motor Vehicle Parts Manufacturing	336390	1,000	38,891	0.10%	1.48%	0.19%	0.04%	0.01%	0.01%	*
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	750 (2007 Size Standards)	18,153	0.05%	*	*	*	*	*	*
Industrial	Aircraft Manufacturing	336411	1,500	96,767	0.02%	*	0.98%	0.10%	0.03%	0.01%	0.00%
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	1,500	50,509	0.06%	2.50%	0.38%	0.05%	0.02%	0.01%	0.00%
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	1,250	43,731	0.11%	*	0.32%	0.06%	0.02%	*	0.00%
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1,250	9,845	0.01%	*	*	*	*	0.00%	*
Industrial	Railroad Rolling Stock Manufacturing	336510	1,500	9,845	0.01%	*	0.04%	0.01%	0.00%	*	*
Industrial	Ship Building and Repairing	336611	1,250	43,704	0.12%	2.95%	0.41%	0.07%	0.03%	0.01%	0.00%
Industrial	Boat Building	336612	1,000	79,000	0.95%	*	0.77%	0.13%	0.06%	*	*
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	1,500	18,153	0.01%	*	*	0.02%	*	*	*
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	750	9,082	0.56%	*	*	0.03%	0.01%	*	*
Industrial	Upholstered Household Furniture Manufacturing	337121	1,000	18,153	0.21%	*	*	0.05%	0.01%	*	*
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	750	34,282	1.96%	*	0.60%	0.12%	*	*	*
Industrial	Institutional Furniture Manufacturing	337127	500	9,845	0.14%	*	0.14%	0.03%	*	*	*
Industrial	Wood Office Furniture Manufacturing	337211	1,000	56,521	0.80%	*	0.79%	0.12%	*	*	*
Industrial	Office Furniture (except Wood) Manufacturing	337214	1,000	24,919	0.07%	*	0.28%	0.04%	0.01%	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	500	9,845	0.16%	*	0.12%	0.02%	0.01%	*	*
Industrial	Blind and Shade Manufacturing	337920	1,000	9,845	0.19%	*	0.12%	0.03%	*	*	*
Industrial	Surgical and Medical Instrument Manufacturing	339112	1,000		**	*,**	*,**	**	**	**	*,**
Industrial	Surgical Appliance and Supplies Manufacturing	339113	750		**	*,**	*,**	**	**	**	*,**
Industrial	Jewelry and Silverware Manufacturing	339910	500		**	**	**	*,**	*,**	*,**	*,**
Industrial	Sporting and Athletic Goods Manufacturing	339920	750		**	**	**	**	**	**	*,**
Industrial	Office Supplies (except Paper) Manufacturing	339940	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	500		**	*,**	**	**	**	*,**	*,**
Industrial	Burial Casket Manufacturing	339995	1,000	9,845	0.14%	*	*	*	*	*	*
Industrial	All Other Miscellaneous Manufacturing	339999	500	18,153	0.89%	3.56%	0.27%	0.02%	*	*	*
Commercial	Grain and Field Bean Merchant Wholesalers	424510	200		**	**	**	*,**	*,**	*,**	*,**
Commercial	Petroleum Bulk Stations and Terminals	424710	200	15,383	0.01%	0.02%	0.01%	*	*	*	*
Commercial	Scheduled Passenger Air Transportation	481111	1,500		**	**	**	*,**	*,**	*,**	*,**
Commercial	Line-Haul Railroads	482111	1,500		*,**	*,**	*,**	*,**	*,**	*,**	*,**
Energy	Pipeline Transportation of Crude Oil	486110	1,500		**	**	**	*,**	*,**	*,**	*,**
Energy	Pipeline Transportation of Natural Gas	486210	\$27.5 million	9,182	0.08%	0.19%	0.03%	*	*	*	*
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1,500		**	**	*,**	*,**	*,**	*,**	*,**
Commercial	Support Activities for Rail Transportation	488210	\$15 million	9,845	0.25%	0.89%	0.14%	*	*	*	*
Commercial	Marine Cargo Handling	488320	\$38.5 million		**	**	**	*,**	*,**	*,**	*,**
Commercial	General Warehousing and Storage	493110	\$27.5 million	20,298	1.14%	2.35%	0.72%	*	*	*	*
Commercial	Other Warehousing and Storage	493190	\$27.5 million	18,153	0.73%	2.66%	0.53%	*	*	*	*
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	\$27.5 million		**	**	**	*,**	*,**	*,**	*,**
Commercial	Testing Laboratories	541380	\$15 million		**	**	**	*,**	*,**	*,**	*,**

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	1,000		*,**	*,**	*,**	*,**	*,**	*,**	*,**
Commercial	All Other Support Services	561990	\$11 million		**	**	**	*,**	*,**	*,**	*,**
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	\$38.5 million	79,570	0.98%	4.67%	0.69%	*	*	*	*
Waste Treatment	Solid Waste Landfill	562212	\$38.5 million	85,585	2.05%	3.99%	0.64%	*	*	*	*
Waste Treatment	Solid Waste Combustors and Incinerators	562213	\$38.5 million	18,153	0.08%	*	0.05%	*	*	*	*
Waste Treatment	Remediation Services	562910	\$20.5 million	9,845	0.27%	0.86%	0.14%	*	*	*	*
Educational Services	Colleges, Universities, and Professional Schools	611310	\$27.5 million	34,282	*	*	*	*	*	*	*
Commercial	Amusement and Theme Parks	713110	\$38.5 million		**	**	**	*,**	*,**	*,**	*,**
Commercial	Linen and Uniform Supply	812330	NA		*,**	*,**	*,**	*,**	*,**	*,**	*,**
Commercial	Industrial Launderers	812332	\$38.5 million	9,845	0.18%	0.66%	0.16%	*	*	*	*

Notes:

Blanks in “Average Avoided Cost/Entity” column are for NAICS where zero facilities are projected to obtain area source status. NA means it is not a valid 2012 NAICS code, thus SBA Size Standards are not available.

*No receipts data available from Census; cost-to-sales ratios cannot be calculated.

**Zero facilities projected to obtain area source status and no projected net costs (savings); cost-to-sales ratios cannot be calculated.

*,**Denotes a data status as a combination of footnotes * and **.

Sources: 2012 Economic Census, 2012 County Business Patterns, 2017 SBA Size Standards, Federal Reserve Bank of St. Louis Economic Research, Eastern Research Group.

Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD. May, 2019. SBA February 2016 Size Standards, SBA 2007 Size Standards.

Table 6-7 Avoided Cost to Sales in Year 2 under the Alternative Scenario 1

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	\$27.5 million		*,**	*,**	*,**	*,**	*,**	*,**	*,**
Energy	Crude Petroleum and Natural Gas Extraction	211111	1,250 (Feb 2016 Size Standards)	10,843	0.02%	*	0.01%	0.00%	0.00%	0.00%	*
Energy	Natural Gas Liquid Extraction	211112	750 (Feb 2016 Size Standards)	36,318	0.03%	0.06%	0.02%	0.01%	0.00%	*	*
Industrial	Iron Ore Mining	212210	750	14,813	0.01%	*	0.10%	0.00%	*	*	*
Industrial	Lead Ore and Zinc Ore Mining	212231	750 (Feb 2016 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Copper Ore and Nickel Ore Mining	212234	1,500 (Feb 2016 Size Standards)		**	*,**	*,**	*,**	**	*,**	*,**
Industrial	All Other Metal Ore Mining	212299	750		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Industrial Sand Mining	212322	500	14,813	0.12%	0.36%	0.08%	0.02%	*	*	*
Industrial	Kaolin and Ball Clay Mining	212324	750	14,813	0.05%	*	0.12%	0.02%	*	*	*
Industrial	Potash, Soda, and Borate Mineral Mining	212391	750	23,121	0.02%	*	*	*	0.01%	*	*
Industrial	All Other Nonmetallic Mineral Mining	212399	500		**	*,**	**	*,**	*,**	*,**	*,**
Energy	Support Activities for Oil and Gas Operations	213112	\$38.5 million	14,813	0.16%	0.69%	0.16%	0.03%	0.01%	0.00%	*
Utilities	Hydroelectric Power Generation	221111	500		**	*,**	*,**	*,**	*,**	*,**	*,**
Utilities	Fossil Fuel Electric Power Generation	221112	750	40,235	0.07%	*	*	*	*	*	*
Utilities	Biomass Electric Power Generation	221117	250	23,121	0.33%	*	*	*	*	*	*
Utilities	Other Electric Power Generation	221118	250		**	*,**	*,**	*,**	*,**	*,**	*,**
Utilities	Other Electric Power Generation^	221119	4 million MWH (2007 Size Standards)	20,351	0.19%	*	*	*	*	*	*
Utilities	Electric Power Distribution	221122	1,000		**	*,**	*,**	*,**	*,**	*,**	*,**
Utilities	Natural Gas Distribution	221210	1,000	21,459	0.06%	*	*	*	*	*	*
Utilities	Water Supply and Irrigation Systems	221310	\$27.5 million		**	*,**	*,**	*,**	*,**	*,**	*,**
Utilities	Sewage Treatment Facilities	221320	\$20.5 million	7,632	0.38%	*	*	*	*	*	*
Utilities	Steam and Air-Conditioning Supply	221330	\$15 million	39,250	0.25%	*	*	*	*	*	*
Industrial	Other Animal Food Manufacturing	311119	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Wet Corn Milling	311221	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	Soybean Processing^	311222	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Other Oilseed Processing^	311223	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Soybean and Other Oilseed Processing	311224	1,000	37,330	0.01%	*	0.01%	*	*	*	*
Industrial	Fats and Oils Refining and Blending	311225	1,000		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Beet Sugar Manufacturing	311313	750		**	*,**	*,**	*,**	**	*,**	*,**

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100-499	500-999	1000-2499	≥2500
Industrial	Cane Sugar Manufacturing	311314	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Fruit and Vegetable Canning	311421	1,000		**	*,**	**	**	*,**	*,**	*,**
Industrial	Specialty Canning	311422	1,250		**	*,**	*,**	*,**	**	*,**	*,**
Industrial	Cheese Manufacturing	311513	1,250		**	**	**	**	**	**	*,**
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Rendering and Meat Byproduct Processing	311613	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Commercial Bakeries	311812	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Other Snack Food Manufacturing	311919	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	Coffee and Tea Manufacturing	311920	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Spice and Extract Manufacturing	311942	500		**	*,**	**	**	*,**	*,**	*,**
Industrial	All Other Miscellaneous Food Manufacturing	311999	500		**	*,**	**	**	**	*,**	*,**
Industrial	Breweries	312120	1,250	14,813	0.04%	*	0.10%	*	*	*	*
Industrial	Distilleries	312140	1,000		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Tobacco Manufacturing	312230	1,500		**	*,**	*,**	**	**	*,**	*,**
Industrial	Yarn Spinning Mills^	313111	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Thread Mills^	313113	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Broadwoven Fabric Mills	313210	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Narrow Fabric Mills^	313221	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Textile and Fabric Finishing Mills	313310	1,000		**	*,**	**	**	*,**	*,**	*,**
Industrial	Broadwoven Fabric Finishing Mills^	313311	1,000 (2007 Size Standards)	14,813	0.22%	*	*	*	*	*	*
Industrial	Fabric Coating Mills	313320	1,000	14,360	0.11%	*	0.08%	*	*	*	*
Industrial	Tire Cord and Tire Fabric Mills^	314992	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Leather and Hide Tanning and Finishing	316110	500	9,943	0.12%	*	0.04%	0.02%	*	*	*
Industrial	Sawmills	321113	500	40,234	0.61%	2.99%	0.31%	0.08%	*	*	*
Industrial	Wood Preservation	321114	500	23,121	0.22%	*	0.09%	*	*	*	*
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	500	23,121	0.21%	*	*	0.05%	*	*	*
Industrial	Softwood Veneer and Plywood Manufacturing	321212	1,250	40,758	0.09%	*	*	0.05%	0.02%	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100-499	500-999	1000-2499	≥2500
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	1,000	23,121	0.04%	*	0.05%	0.01%	0.01%	*	*
Industrial	Alkalies and Chlorine Manufacturing [^]	325181	1,000 (2007 Size Standards)	17,569	0.01%	*	*	*	*	*	*
Industrial	Carbon Black Manufacturing [^]	325182	500 (2007 Size Standards)	11,293	0.01%	*	*	*	*	*	*
Industrial	All Other Basic Inorganic Chemical Manufacturing [^]	325188	1000 (2007 Size Standards)	9,082	0.02%	*	*	*	*	*	*
Industrial	Cyclic Crude and Intermediate Manufacturing [^]	325192	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Ethyl Alcohol Manufacturing	325193	1,000	23,121	0.01%	*	0.01%	0.00%	*	*	*
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	All Other Basic Organic Chemical Manufacturing	325199	1,250	53,152	0.05%	*	0.09%	0.02%	0.00%	0.00%	*
Industrial	Plastics Material and Resin Manufacturing	325211	1,250	147,505	0.18%	*	0.34%	0.04%	0.01%	0.01%	*
Industrial	Synthetic Rubber Manufacturing	325212	1,000	4,211	0.01%	*	0.01%	*	*	*	*
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	1,000	23,121	0.03%	*	0.10%	0.02%	0.00%	*	*
Industrial	Cellulosic Organic Fiber Manufacturing [^]	325221	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Noncellulosic Organic Fiber Manufacturing [^]	325222	1,000 (2007 Size Standards)	117,367	0.19%	*	*	*	*	*	*
Industrial	Nitrogenous Fertilizer Manufacturing	325311	1,000	61,489	0.12%	*	0.11%	*	*	*	*
Industrial	Phosphatic Fertilizer Manufacturing	325312	750	23,121	0.01%	*	*	*	*	*	*
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	1,000	39,139	0.05%	*	0.07%	0.01%	*	*	*
Industrial	Medicinal and Botanical Manufacturing	325411	1,000	14,813	0.05%	*	0.09%	0.02%	0.00%	*	*
Industrial	Pharmaceutical Preparation Manufacturing	325412	1,250	119,753	0.10%	*	*	0.04%	0.02%	0.01%	*
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1,250		**	*,**	*,**	**	**	**	*,**
Industrial	Paint and Coating Manufacturing	325510	1,000	119,734	0.56%	*	0.40%	0.09%	*	*	*
Industrial	Adhesive Manufacturing	325520	500	14,813	0.06%	0.35%	0.05%	0.01%	*	*	*
Industrial	Surface Active Agent Manufacturing	325613	750		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Toilet Preparation Manufacturing	325620	1,250		**	**	**	**	**	**	*,**
Industrial	Explosives Manufacturing	325920	750		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Custom Compounding of Purchased Resins	325991	500	23,121	0.10%	*	0.08%	0.02%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100-499	500-999	1000-2499	≥2500
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	1,500	14,813	0.05%	*	0.07%	0.01%	*	*	*
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	500	23,121	0.13%	0.74%	0.08%	0.02%	0.01%	*	*
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	1,000	23,121	0.07%	0.74%	0.11%	0.03%	*	*	*
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	750	43,859	0.14%	*	0.20%	0.05%	0.01%	*	*
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	500		**	*,**	**	**	*,**	*,**	*,**
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	750		**	**	**	**	*,**	*,**	*,**
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	500	20,351	0.13%	*	0.13%	*	*	*	*
Industrial	Polystyrene Foam Product Manufacturing	326140	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	750	3,403	0.02%	*	0.02%	0.01%	*	*	*
Industrial	Plastics Plumbing Fixture Manufacturing	326191	750		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	All Other Plastics Product Manufacturing	326199	750	36,734	0.28%	2.46%	0.32%	0.07%	0.02%	0.01%	*
Industrial	Tire Manufacturing (except Retreading)	326211	1,500	38,902	0.02%	*	*	0.03%	0.01%	0.01%	*
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	750	23,121	0.11%	*	*	0.03%	0.02%	*	*
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	750		**	*,**	*,**	**	**	*,**	*,**
Industrial	All Other Rubber Product Manufacturing	326299	500	21,459	0.13%	1.08%	0.15%	0.03%	*	*	*
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	1,000	29,714	0.89%	*	0.44%	0.08%	*	*	*
Industrial	Clay Building Material and Refractories Manufacturing	327120	750		**	**	**	**	*,**	*,**	*,**
Industrial	Clay Refractory Manufacturing [^]	327124	500 (2007 Size Standards)	26,413	0.28%	*	*	*	*	*	*
Industrial	Flat Glass Manufacturing	327211	1,000		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	1,250	19,170	0.22%	*	*	*	0.01%	*	*
Industrial	Cement Manufacturing	327310	1,000	23,121	0.09%	*	*	*	*	*	*
Industrial	Lime Manufacturing	327410	750	22,834	0.09%	*	*	*	*	*	*
Industrial	Gypsum Product Manufacturing	327420	1,500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Abrasive Product Manufacturing	327910	750	14,813	0.08%	0.66%	0.09%	0.01%	0.00%	*	*
Industrial	Mineral Wool Manufacturing	327993	1,500	27,944	0.15%	*	0.20%	0.03%	*	*	*
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	500		**	*,**	**	*,**	*,**	*,**	*,**

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100-499	500-999	1000-2499	≥2500
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	1,500	32,265	0.01%	*	*	0.01%	0.00%	0.00%	*
Industrial	Iron and Steel Mills^	331111	1,000 (2007 Size Standards)	21,459	0.01%	*	*	*	*	*	*
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	1,000	23,121	0.03%	0.47%	0.08%	0.02%	0.01%	0.00%	*
Industrial	Rolled Steel Shape Manufacturing	331221	1,000	23,121	0.07%	*	0.07%	*	*	*	*
Industrial	Primary Aluminum Production^	331312	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Alumina Refining and Primary Aluminum Production	331313	1,000	14,813	0.01%	*	0.03%	0.01%	0.00%	*	*
Industrial	Secondary Smelting and Alloying of Aluminum	331314	750	7,662	0.01%	*	0.02%	*	*	*	*
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	1,250	23,121	0.01%	*	*	0.01%	0.00%	*	*
Industrial	Aluminum Extruded Product Manufacturing^	331316	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	750		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1,000		**	*,**	**	*,**	**	*,**	*,**
Industrial	Primary Smelting and Refining of Copper^	331411	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	750	14,813	0.06%	*	0.07%	0.02%	*	*	*
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Iron Foundries	331511	1,000	28,632	0.10%	*	*	0.05%	0.01%	*	*
Industrial	Steel Foundries (except Investment)	331513	500		**	*,**	**	**	**	*,**	*,**

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100-499	500-999	1000-2499	≥2500
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1,000		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1,250		**	**	**	**	**	**	*,**
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1,500		**	*,**	*,**	**	**	**	*,**
Industrial	Other Engine Equipment Manufacturing	333618	1,500	23,121	0.03%	0.96%	0.11%	0.02%	0.00%	0.00%	*
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	Welding and Soldering Equipment Manufacturing	333992	1,250		**	**	**	**	*,**	**	*,**
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1,250		**	**	**	**	**	**	**
Industrial	Electron Tube Manufacturing^	334411	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Bare Printed Circuit Board Manufacturing	334412	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Semiconductor and Related Device Manufacturing	334413	1,250	39,385	0.07%	*	0.13%	0.05%	0.01%	0.00%	*
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	500		**	*,**	**	*,**	**	*,**	*,**
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	1,000		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1,250	14,813	0.05%	*	*	0.03%	*	*	*
Industrial	Household Laundry Equipment Manufacturing	335224	1,250	28,514	*	*	*	*	*	*	*
Industrial	Other Major Household Appliance Manufacturing	335228	1,000	23,121	0.01%	*	*	*	0.01%	*	*
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	750	14,813	0.06%	*	0.11%	0.02%	0.01%	*	*
Industrial	Motor and Generator Manufacturing	335312	1,250	23,121	0.09%	*	0.21%	0.03%	*	*	*
Industrial	Storage Battery Manufacturing	335911	1,250	14,813	0.03%	*	*	0.02%	0.01%	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100-499	500-999	1000-2499	≥2500
Industrial	Current-Carrying Wiring Device Manufacturing	335931	500	14,813	0.09%	*	0.13%	0.03%	0.01%	*	*
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1,000	14,813	0.04%	*	0.07%	0.02%	*	*	*
Industrial	Carbon and Graphite Product Manufacturing	335991	750	55,477	0.23%	*	0.35%	0.07%	*	*	*
Industrial	Automobile Manufacturing	336111	1,500	44,522	0.01%	*	*	*	*	0.00%	0.00%
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	1,500	61,489	0.00%	*	*	0.12%	*	*	0.00%
Industrial	Heavy Duty Truck Manufacturing	336120	1,500	55,477	0.02%	*	*	*	0.01%	0.00%	*
Industrial	Motor Vehicle Body Manufacturing	336211	1,000	55,477	0.35%	*	0.51%	0.10%	0.03%	*	*
Industrial	Truck Trailer Manufacturing	336212	1,000	14,813	0.08%	*	0.14%	0.02%	0.01%	*	*
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	1,000	23,121	0.06%	*	0.18%	0.03%	0.00%	*	*
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	500 (2007 Size Standards)	14,813	0.06%	*	*	*	*	*	*
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	750 (2007 Size Standards)	23,121	0.06%	*	*	*	*	*	*
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	1,000	23,121	0.05%	*	0.13%	0.02%	0.01%	*	*
Industrial	Motor Vehicle Brake System Manufacturing	336340	1,250	14,813	0.03%	*	0.06%	0.01%	0.01%	*	*
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	1,500	23,121	0.03%	*	0.09%	0.02%	0.01%	0.00%	*
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1,500	14,813	0.03%	*	0.07%	0.01%	0.00%	*	*
Industrial	Motor Vehicle Metal Stamping	336370	1,000	14,813	0.04%	0.71%	0.10%	0.02%	0.01%	0.00%	*
Industrial	Other Motor Vehicle Parts Manufacturing	336390	1,000	43,859	0.11%	1.67%	0.21%	0.04%	0.01%	0.01%	*
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	750 (2007 Size Standards)	23,121	0.06%	*	*	*	*	*	*
Industrial	Aircraft Manufacturing	336411	1,500	101,735	0.03%	*	1.03%	0.11%	0.03%	0.01%	0.00%
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	1,500	55,477	0.07%	2.74%	0.42%	0.06%	0.02%	0.01%	0.00%
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	1,250	48,699	0.12%	*	0.36%	0.07%	0.02%	*	0.00%
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1,250	14,813	0.01%	*	*	*	*	0.00%	*
Industrial	Railroad Rolling Stock Manufacturing	336510	1,500	14,813	0.02%	*	0.06%	0.01%	0.00%	*	*
Industrial	Ship Building and Repairing	336611	1,250	48,672	0.13%	3.28%	0.46%	0.08%	0.03%	0.01%	0.00%

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100-499	500-999	1000-2499	≥2500
Industrial	Boat Building	336612	1,000	83,991	1.01%	*	0.82%	0.14%	0.06%	*	*
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	1,500	23,121	0.02%	*	*	0.03%	*	*	*
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	750	14,050	0.86%	*	*	0.04%	0.01%	*	*
Industrial	Upholstered Household Furniture Manufacturing	337121	1,000	23,121	0.26%	*	*	0.07%	0.02%	*	*
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	750	39,250	2.24%	*	0.69%	0.14%	*	*	*
Industrial	Institutional Furniture Manufacturing	337127	500	14,813	0.22%	*	0.20%	0.04%	*	*	*
Industrial	Wood Office Furniture Manufacturing	337211	1,000	61,489	0.87%	*	0.86%	0.13%	*	*	*
Industrial	Office Furniture (except Wood) Manufacturing	337214	1,000	29,887	0.09%	*	0.34%	0.05%	0.01%	*	*
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	500	14,813	0.24%	*	0.18%	0.04%	0.01%	*	*
Industrial	Blind and Shade Manufacturing	337920	1,000	14,813	0.29%	*	0.18%	0.04%	*	*	*
Industrial	Surgical and Medical Instrument Manufacturing	339112	1,000		**	*,**	*,**	**	**	**	*,**
Industrial	Surgical Appliance and Supplies Manufacturing	339113	750		**	*,**	*,**	**	**	**	*,**
Industrial	Jewelry and Silverware Manufacturing	339910	500		**	**	**	*,**	*,**	*,**	*,**
Industrial	Sporting and Athletic Goods Manufacturing	339920	750		**	**	**	**	**	**	*,**
Industrial	Office Supplies (except Paper) Manufacturing	339940	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	500		**	*,**	**	**	**	*,**	*,**
Industrial	Burial Casket Manufacturing	339995	1,000	14,813	0.22%	*	*	*	*	*	*
Industrial	All Other Miscellaneous Manufacturing	339999	500	23,121	1.13%	4.53%	0.34%	0.03%	*	*	*
Commercial	Grain and Field Bean Merchant Wholesalers	424510	200		**	**	**	*,**	*,**	*,**	*,**
Commercial	Petroleum Bulk Stations and Terminals	424710	200	20,351	0.01%	0.03%	0.01%	*	*	*	*
Commercial	Scheduled Passenger Air Transportation	481111	1,500		**	**	**	*,**	*,**	*,**	*,**
Commercial	Line-Haul Railroads	482111	1,500		*,**	*,**	*,**	*,**	*,**	*,**	*,**
Energy	Pipeline Transportation of Crude Oil	486110	1,500		**	**	**	*,**	*,**	*,**	*,**
Energy	Pipeline Transportation of Natural Gas	486210	\$27.5 million	14,150	0.13%	0.30%	0.04%	*	*	*	*
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1,500		**	**	*,**	*,**	*,**	*,**	*,**
Commercial	Support Activities for Rail Transportation	488210	\$15 million	14,813	0.38%	1.34%	0.21%	*	*	*	*
Commercial	Marine Cargo Handling	488320	\$38.5 million		**	**	**	*,**	*,**	*,**	*,**
Commercial	General Warehousing and Storage	493110	\$27.5 million	25,266	1.42%	2.92%	0.89%	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100-499	500-999	1000-2499	≥2500
Commercial	Other Warehousing and Storage	493190	\$27.5 million	23,121	0.93%	3.39%	0.67%	*	*	*	*
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	\$27.5 million		**	**	**	*,**	*,**	*,**	*,**
Commercial	Testing Laboratories	541380	\$15 million		**	**	**	*,**	*,**	*,**	*,**
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	1,000		*,**	*,**	*,**	*,**	*,**	*,**	*,**
Commercial	All Other Support Services	561990	\$11 million		**	**	**	*,**	*,**	*,**	*,**
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	\$38.5 million	84,538	1.04%	4.96%	0.74%	*	*	*	*
Waste Treatment	Solid Waste Landfill	562212	\$38.5 million	90,553	2.17%	4.22%	0.68%	*	*	*	*
Waste Treatment	Solid Waste Combustors and Incinerators	562213	\$38.5 million	23,121	0.10%	*	0.07%	*	*	*	*
Waste Treatment	Remediation Services	562910	\$20.5 million	14,813	0.41%	1.30%	0.21%	*	*	*	*
Educational Services	Colleges, Universities, and Professional Schools	611310	\$27.5 million	39,250	*	*	*	*	*	*	*
Commercial	Amusement and Theme Parks	713110	\$38.5 million		**	**	**	*,**	*,**	*,**	*,**
Commercial	Linen and Uniform Supply	812330	NA		*,**	*,**	*,**	*,**	*,**	*,**	*,**
Commercial	Industrial Launderers	812332	\$38.5 million	14,813	0.26%	1.00%	0.25%	*	*	*	*

Notes:

Blanks in “Average Avoided Cost/Entity” column are for NAICS where zero facilities are projected to obtain area source status. NA means it is not a valid 2012 NAICS code, thus an SBA Size Standard is not available.

*No receipts data available from Census; cost-to-sales ratios cannot be calculated.

**Zero facilities projected to obtain area source status and no projected net costs (savings); cost-to-sales ratios cannot be calculated.

*,**Denotes a data status as a combination of footnotes * and **.

Sources: 2012 Economic Census, 2012 County Business Patterns, 2017 SBA Size Standards, Federal Reserve Bank of St. Louis Economic Research, Eastern Research Group. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD. May, 2019. SBA February 2016 Size Standards, SBA 2007 Size Standards.

6.5 Implementing the Sales Test to Measure Impacts on Industrial, Commercial and Other Sources under Alternative Scenario 2

For alternative scenario 2, which has a threshold of 125%, the year 1 cost-to-sales ratios are reported in Table 6-8, and the year 2 avoided cost-to-sales ratios are reported in Table 6-9. The year 1 avoided cost-to-sales ratios range from less than 0.01% to 11.08%, with a median avoided cost-to-sales ratio of 0.05% across all employment size categories. The twenty-fifth percentile and seventy-fifth percentile avoided cost-to-sales ratio in year 1 are 0.01% and 0.16% respectively across all employment size categories. The year 2 avoided cost-to-sales ratios range from less than 0.01% to 12.05%, with a median avoided cost-to-sales ratio of 0.06% across all employment size categories. The twenty-fifth percentile and seventy-fifth percentile avoided cost-to-sales ratio in year 2 are 0.02% and 0.21% respectively across all employment size categories.

Because facilities do not face permitting costs in year 2, the cost savings are generally larger and the resulting avoided cost-to-sales ratios are larger in year 2 than year 1. For example, NAICS 561990 (All Other Support Services) has an overall year 1 avoided cost-to-sales ratio of 0.63% and an overall year 2 avoided cost-to-sales ratio of 0.94%. Some NAICS codes that have less than 0.01% ratios in year 1 have positive ratios in year 2, such as NAICS 326150 (Urethane and other Foam Product [except Polystyrene Manufacturing]), which has an overall avoided cost-to-sales ratio of less than 0.01% in year 1 and 0.04% in year 2.

Like for the primary scenario and alternative scenario 1, we conducted a small entity analysis for both year 1 and year 2 impact estimates for alternative scenario 2. In year 1, some small size categories have low avoided cost-to-sales ratios. For instance, NAICS 424510 (Grain and Field Bean Merchant Wholesalers) has an avoided cost-to-sales of 0.04% for the “fewer than or equal to 19 employees” category and 0.01% for the “20 to 99 employees” category in year 1. However, there are cases of larger positive economic impacts for small size categories in years 1 and 2. NAICS 339999 (All Other Miscellaneous Manufacturing) has a year 1 “fewer than or equal to 19 employees” category avoided cost-to-sales ratio of 11.08%, and NAICS 493190 (Other Warehousing and Storage) has a year 2 avoided cost-to-sales ratio of 9.02% for the same size category. As explained before, establishments in the size category “fewer than or equal to 19

employees” for NAICS 493190 are considered small businesses for purposes of this analysis based on the SBA size standard for this NAICS code.

Table 6-8 Avoided Cost to Sales in Year 1 under the Alternative Scenario 2

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	\$27.5 million	9,845	*	*	*	*	*	*	*
Energy	Crude Petroleum and Natural Gas Extraction	211111	1,250 (Feb 2016 Size Standards)	4,982	0.01%	*	0.01%	0.00%	0.00%	0.00%	*
Energy	Natural Gas Liquid Extraction	211112	750 (Feb 2016 Size Standards)	34,813	0.03%	0.06%	0.02%	0.01%	0.00%	*	*
Industrial	Iron Ore Mining	212210	750	18,153	0.01%	*	0.13%	0.01%	*	*	*
Industrial	Lead Ore and Zinc Ore Mining	212231	750 (Feb 2016 Size Standards)	9,845	0.01%	*	*	*	*	*	*
Industrial	Copper Ore and Nickel Ore Mining	212234	1,500 (Feb 2016 Size Standards)	9,845	0.00%	*	*	*	0.00%	*	*
Industrial	All Other Metal Ore Mining	212299	750	9,845	0.02%	*	*	0.01%	*	*	*
Industrial	Industrial Sand Mining	212322	500	18,153	0.14%	0.44%	0.09%	0.02%	*	*	*
Industrial	Kaolin and Ball Clay Mining	212324	750	18,153	0.06%	*	0.14%	0.02%	*	*	*
Industrial	Potash, Soda, and Borate Mineral Mining	212391	750	56,521	0.05%	*	*	*	0.01%	*	*
Industrial	All Other Nonmetallic Mineral Mining	212399	500	9,845	0.23%	*	0.12%	*	*	*	*
Energy	Support Activities for Oil and Gas Operations	213112	\$38.5 million	18,153	0.20%	0.85%	0.19%	0.04%	0.01%	0.00%	*
Utilities	Hydroelectric Power Generation	221111	500	9,845	0.16%	*	*	*	*	*	*
Utilities	Fossil Fuel Electric Power Generation	221112	750	34,013	0.06%	*	*	*	*	*	*
Utilities	Biomass Electric Power Generation	221117	250	56,521	0.81%	*	*	*	*	*	*
Utilities	Other Electric Power Generation	221118	250	9,845	0.40%	*	*	*	*	*	*
Utilities	Other Electric Power Generation^	221119	4 million MWH (2007 Size Standards)	50,509	0.48%	*	*	*	*	*	*
Utilities	Electric Power Distribution	221122	1,000	9,845	0.02%	*	*	*	*	*	*
Utilities	Natural Gas Distribution	221210	1,000	38,891	0.10%	*	*	*	*	*	*
Utilities	Water Supply and Irrigation Systems	221310	\$27.5 million	18,153	0.75%	*	*	*	*	*	*
Utilities	Sewage Treatment Facilities	221320	\$20.5 million	17,392	0.87%	*	*	*	*	*	*
Utilities	Steam and Air-Conditioning Supply	221330	\$15 million	28,133	0.18%	*	*	*	*	*	*
Industrial	Other Animal Food Manufacturing	311119	500		**	*,**	**	*,**	*,**	*,**	*,**

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Wet Corn Milling	311221	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	Soybean Processing^	311222	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Other Oilseed Processing^	311223	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Soybean and Other Oilseed Processing	311224	1,000	32,362	0.01%	*	0.01%	*	*	*	*
Industrial	Fats and Oils Refining and Blending	311225	1,000		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Beet Sugar Manufacturing	311313	750		**	*,**	*,**	*,**	**	*,**	*,**
Industrial	Cane Sugar Manufacturing	311314	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Fruit and Vegetable Canning	311421	1,000		**	*,**	**	**	*,**	*,**	*,**
Industrial	Specialty Canning	311422	1,250		**	*,**	*,**	*,**	**	*,**	*,**
Industrial	Cheese Manufacturing	311513	1,250		**	**	**	**	**	**	*,**
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Rendering and Meat Byproduct Processing	311613	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Commercial Bakeries	311812	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Other Snack Food Manufacturing	311919	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	Coffee and Tea Manufacturing	311920	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Spice and Extract Manufacturing	311942	500		**	*,**	**	**	*,**	*,**	*,**
Industrial	All Other Miscellaneous Food Manufacturing	311999	500		**	*,**	**	**	**	*,**	*,**
Industrial	Breweries	312120	1,250	18,153	0.05%	*	0.12%	*	*	*	*
Industrial	Distilleries	312140	1,000	9,845	0.02%	*	*	*	*	*	*
Industrial	Tobacco Manufacturing	312230	1,500	9,845	0.00%	*	*	0.00%	0.00%	*	*
Industrial	Yarn Spinning Mills^	313111	500 (2007 Size Standards)	9,845	0.04%	*	*	*	*	*	*
Industrial	Thread Mills^	313113	500 (2007 Size Standards)	9,845	0.15%	*	*	*	*	*	*
Industrial	Broadwoven Fabric Mills	313210	1,000	18,153	0.13%	*	0.15%	0.04%	0.01%	*	*
Industrial	Narrow Fabric Mills^	313221	500 (2007 Size Standards)	9,845	0.15%	*	*	*	*	*	*
Industrial	Textile and Fabric Finishing Mills	313310	1,000	9,845	0.16%	*	0.08%	0.02%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Broadwoven Fabric Finishing Mills^	313311	1,000 (2007 Size Standards)	18,153	0.26%	*	*	*	*	*	*
Industrial	Fabric Coating Mills	313320	1,000	14,048	0.11%	*	0.08%	*	*	*	*
Industrial	Tire Cord and Tire Fabric Mills^	314992	1,000 (2007 Size Standards)	9,845	0.01%	*	*	*	*	*	*
Industrial	Leather and Hide Tanning and Finishing	316110	500	4,975	0.06%	*	0.02%	0.01%	*	*	*
Industrial	Sawmills	321113	500	34,309	0.52%	2.55%	0.27%	0.07%	*	*	*
Industrial	Wood Preservation	321114	500	18,153	0.17%	*	0.07%	*	*	*	*
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	500	18,153	0.17%	*	*	0.04%	*	*	*
Industrial	Softwood Veneer and Plywood Manufacturing	321212	1,250	31,639	0.07%	*	*	0.04%	0.02%	*	*
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	750	56,521	0.65%	*	*	0.09%	*	*	*
Industrial	Reconstituted Wood Product Manufacturing	321219	750	26,892	0.09%	*	*	0.03%	*	*	*
Industrial	Wood Window and Door Manufacturing	321911	1,000	18,153	0.22%	*	*	0.04%	*	*	*
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	500	18,153	0.29%	1.22%	0.16%	*	*	*	*
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	500	18,153	0.61%	2.07%	0.20%	0.04%	*	*	*
Industrial	Pulp Mills	322110	750		**	*,**	*,**	**	**	*,**	*,**
Industrial	Paper (except Newsprint) Mills	322121	1,250	104,239	0.04%	*	*	0.05%	0.02%	0.01%	*
Industrial	Newsprint Mills	322122	750		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Paperboard Mills	322130	1,250		**	*,**	*,**	**	**	*,**	*,**
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	1,250	16,206	0.06%	0.49%	0.07%	0.02%	*	*	*
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	750		**	*,**	**	**	**	*,**	*,**
Industrial	Coated and Laminated Paper Manufacturing^	322222	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Sanitary Paper Product Manufacturing	322291	1,500		**	*,**	*,**	**	**	*,**	*,**
Industrial	All Other Converted Paper Product Manufacturing	322299	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Commercial Lithographic Printing^	323110	500 (2007 Size Standards)	9,845	0.25%	*	*	*	*	*	*
Industrial	Commercial Printing (except Screen and Books)	323111	500	11,760	0.35%	*	0.14%	0.03%	0.01%	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Books Printing	323117	1,250	18,153	0.20%	*	*	0.04%	0.02%	*	*
Industrial	Petroleum Refineries	324110	1,500	172,499	0.00%	*	0.07%	0.01%	*	0.00%	*
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	750	9,845	0.02%	*	0.02%	*	*	*	*
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	500	9,845	0.02%	*	0.01%	*	*	*	*
Industrial	Petrochemical Manufacturing	325110	1,000	1,394	0.00%	*	*	0.00%	*	*	*
Industrial	Industrial Gas Manufacturing	325120	1,000	9,845	0.06%	0.15%	0.04%	*	*	*	*
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1,000		**	*,**	**	**	*,**	*,**	*,**
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	1,000 (2007 Size Standards)	9,845	0.01%	*	*	*	*	*	*
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	1,000	15,383	0.03%	*	0.03%	0.01%	0.00%	*	*
Industrial	Alkalies and Chlorine Manufacturing^	325181	1,000 (2007 Size Standards)	11,388	0.01%	*	*	*	*	*	*
Industrial	Carbon Black Manufacturing^	325182	500 (2007 Size Standards)	6,777	0.01%	*	*	*	*	*	*
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	1,000 (2007 Size Standards)	4,902	0.01%	*	*	*	*	*	*
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Ethyl Alcohol Manufacturing	325193	1,000	15,383	0.01%	*	0.01%	0.00%	*	*	*
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	All Other Basic Organic Chemical Manufacturing	325199	1,250	48,331	0.04%	*	0.08%	0.02%	0.00%	0.00%	*
Industrial	Plastics Material and Resin Manufacturing	325211	1,250	142,633	0.17%	*	0.33%	0.04%	0.01%	0.01%	*
Industrial	Synthetic Rubber Manufacturing	325212	1,000	(2,082)	0.00%	*	0.00%	*	*	*	*
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	1,000	18,153	0.03%	*	0.08%	0.01%	0.00%	*	*
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	1,000 (2007 Size Standards)	127,921	0.20%	*	*	*	*	*	*
Industrial	Nitrogenous Fertilizer Manufacturing	325311	1,000	38,891	0.07%	*	0.07%	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Phosphatic Fertilizer Manufacturing	325312	750	15,383	0.01%	*	*	*	*	*	*
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	1,000	50,389	0.07%	*	0.08%	0.02%	*	*	*
Industrial	Medicinal and Botanical Manufacturing	325411	1,000	9,845	0.03%	*	0.06%	0.01%	0.00%	*	*
Industrial	Pharmaceutical Preparation Manufacturing	325412	1,250	125,827	0.10%	*	*	0.04%	0.02%	0.01%	*
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1,250		**	*,**	*,**	**	**	**	*,**
Industrial	Paint and Coating Manufacturing	325510	1,000	117,743	0.55%	*	0.39%	0.09%	*	*	*
Industrial	Adhesive Manufacturing	325520	500	9,845	0.04%	0.24%	0.03%	0.01%	*	*	*
Industrial	Surface Active Agent Manufacturing	325613	750		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Toilet Preparation Manufacturing	325620	1,250		**	**	**	**	**	**	*,**
Industrial	Explosives Manufacturing	325920	750		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Custom Compounding of Purchased Resins	325991	500	18,153	0.08%	*	0.07%	0.01%	*	*	*
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	1,500	9,845	0.03%	*	0.05%	0.01%	*	*	*
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	500	15,383	0.09%	0.49%	0.05%	0.01%	0.01%	*	*
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	1,000	56,521	0.17%	1.81%	0.27%	0.07%	*	*	*
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	750	31,838	0.10%	*	0.15%	0.03%	0.01%	*	*
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	500	9,845	0.06%	*	0.08%	0.02%	*	*	*
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	750	9,845	0.05%	0.23%	0.04%	0.02%	*	*	*
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	500	47,186	0.31%	*	0.30%	*	*	*	*
Industrial	Polystyrene Foam Product Manufacturing	326140	1,000	9,845	0.05%	*	0.06%	0.01%	0.00%	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	750	510	0.00%	*	0.00%	0.00%	*	*	*
Industrial	Plastics Plumbing Fixture Manufacturing	326191	750	18,153	0.23%	*	0.19%	*	*	*	*
Industrial	All Other Plastics Product Manufacturing	326199	750	32,510	0.25%	2.17%	0.29%	0.06%	0.02%	0.01%	*
Industrial	Tire Manufacturing (except Retreading)	326211	1,500	29,928	0.02%	*	*	0.02%	0.01%	0.00%	*
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	750	56,521	0.27%	*	*	0.08%	0.04%	*	*
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	750	18,153	0.11%	*	*	0.03%	0.01%	*	*
Industrial	All Other Rubber Product Manufacturing	326299	500	37,337	0.23%	1.89%	0.26%	0.06%	*	*	*
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	1,000	12,008	0.36%	*	0.18%	0.03%	*	*	*
Industrial	Clay Building Material and Refractories Manufacturing	327120	750	18,153	0.20%	1.13%	0.18%	0.04%	*	*	*
Industrial	Clay Refractory Manufacturing [^]	327124	500 (2007 Size Standards)	17,453	0.19%	*	*	*	*	*	*
Industrial	Flat Glass Manufacturing	327211	1,000	18,153	0.03%	*	*	*	*	*	*
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	1,250	29,906	0.35%	*	*	*	0.02%	*	*
Industrial	Cement Manufacturing	327310	1,000	56,521	0.22%	*	*	*	*	*	*
Industrial	Lime Manufacturing	327410	750	17,517	0.07%	*	*	*	*	*	*
Industrial	Gypsum Product Manufacturing	327420	1,500	9,845	0.06%	*	0.03%	*	*	*	*
Industrial	Abrasive Product Manufacturing	327910	750	18,153	0.10%	0.81%	0.12%	0.02%	0.00%	*	*
Industrial	Mineral Wool Manufacturing	327993	1,500	46,947	0.25%	*	0.34%	0.05%	*	*	*
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	500	18,153	0.19%	*	0.12%	*	*	*	*
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	1,500	30,422	0.01%	*	*	0.01%	0.00%	0.00%	*
Industrial	Iron and Steel Mills [^]	331111	1,000 (2007 Size Standards)	43,731	0.01%	*	*	*	*	*	*
Industrial	Electrometallurgical Ferroalloy Product Manufacturing [^]	331112	750 (2007 Size Standards)	9,845	0.01%	*	*	*	*	*	*
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	1,000	56,521	0.08%	1.14%	0.20%	0.05%	0.01%	0.01%	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Rolled Steel Shape Manufacturing	331221	1,000	56,521	0.18%	*	0.16%	*	*	*	*
Industrial	Primary Aluminum Production^	331312	1,000 (2007 Size Standards)	18,153	0.01%	*	*	*	*	*	*
Industrial	Alumina Refining and Primary Aluminum Production	331313	1,000	18,153	0.01%	*	0.04%	0.01%	0.00%	*	*
Industrial	Secondary Smelting and Alloying of Aluminum	331314	750	3,491	0.01%	*	0.01%	*	*	*	*
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	1,250	56,521	0.04%	*	*	0.03%	0.01%	*	*
Industrial	Aluminum Extruded Product Manufacturing^	331316	750 (2007 Size Standards)	9,845	0.03%	*	*	*	*	*	*
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	750	18,153	0.05%	*	*	0.02%	*	*	*
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1,000	9,845	0.01%	*	0.01%	*	0.00%	*	*
Industrial	Primary Smelting and Refining of Copper^	331411	1,000 (2007 Size Standards)		**	*, **	*, **	*, **	*, **	*, **	*, **
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	750 (2007 Size Standards)	9,845	0.02%	*	*	*	*	*	*
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	1,000	18,153	0.02%	*	0.02%	0.01%	0.00%	*	*
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1,000 (2007 Size Standards)	9,845	0.02%	*	*	*	*	*	*
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	750	18,153	0.07%	*	0.08%	0.02%	*	*	*
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	750	18,153	0.03%	*	0.03%	0.01%	*	*	*
Industrial	Iron Foundries	331511	1,000	22,161	0.08%	*	*	0.04%	0.01%	*	*
Industrial	Steel Foundries (except Investment)	331513	500	18,153	0.08%	*	0.16%	0.03%	0.01%	*	*
Industrial	Aluminum Die-Casting Foundries^	331521	500 (2007 Size Standards)	9,845	0.05%	*	*	*	*	*	*
Industrial	Aluminum Foundries (except Die-Casting)	331524	500	18,153	0.26%	*	0.25%	0.04%	*	*	*
Industrial	Nonferrous Forging	332112	750	9,845	0.02%	*	*	0.01%	0.00%	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	500	9,845	0.12%	0.73%	0.10%	0.02%	0.01%	*	*
Industrial	Hand and Edge Tool Manufacturing^	332212	500 (2007 Size Standards)	9,845	0.17%	*	*	*	*	*	*
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	750	9,845	0.10%	*	0.07%	0.02%	*	*	*
Industrial	Fabricated Structural Metal Manufacturing	332312	500	9,845	0.11%	*	0.08%	0.02%	*	*	*
Industrial	Metal Window and Door Manufacturing	332321	750	43,731	0.46%	*	0.44%	0.10%	0.03%	*	*
Industrial	Sheet Metal Work Manufacturing	332322	500	9,845	0.19%	0.75%	0.11%	0.03%	*	*	*
Industrial	Metal Can Manufacturing	332431	1,500	36,539	0.04%	*	0.06%	0.02%	*	*	*
Industrial	Other Metal Container Manufacturing	332439	500	15,383	0.14%	1.14%	0.10%	0.03%	0.01%	*	*
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	500	9,845	0.08%	0.67%	0.08%	0.02%	0.01%	*	*
Industrial	Metal Heat Treating	332811	750	9,845	0.12%	*	0.12%	*	*	*	*
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	500	36,935	0.69%	4.56%	0.37%	0.05%	*	*	*
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	500	15,383	0.50%	1.95%	0.26%	*	*	*	*
Industrial	Other Fabricated Metal Manufacturing	332990	NA	9,845	*	*	*	*	*	*	*
Industrial	Small Arms Ammunition Manufacturing	332992	1,250	9,845	0.03%	*	*	*	*	*	*
Industrial	Ammunition (except Small Arms) Manufacturing	332993	1,500	15,383	0.02%	*	*	*	*	*	*
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	750	15,383	0.39%	1.79%	0.19%	0.03%	0.01%	*	*
Industrial	Farm Machinery and Equipment Manufacturing	333111	1,250	50,509	0.16%	*	0.40%	0.05%	0.01%	0.01%	*
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1,500	9,845	0.02%	*	*	0.01%	0.00%	*	*
Industrial	Construction Machinery Manufacturing	333120	1,250	71,327	0.13%	*	0.48%	0.07%	0.01%	0.00%	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1,250	9,845	0.03%	*	*	0.02%	*	*	*
Industrial	Household Laundry Equipment Manufacturing	335224	1,250	23,546	*	*	*	*	*	*	*
Industrial	Other Major Household Appliance Manufacturing	335228	1,000	18,153	0.01%	*	*	*	0.00%	*	*
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	750	9,845	0.04%	*	0.07%	0.01%	0.01%	*	*
Industrial	Motor and Generator Manufacturing	335312	1,250	18,153	0.07%	*	0.16%	0.02%	*	*	*
Industrial	Storage Battery Manufacturing	335911	1,250	9,845	0.02%	*	*	0.01%	0.01%	*	*
Industrial	Current-Carrying Wiring Device Manufacturing	335931	500	9,845	0.06%	*	0.09%	0.02%	0.00%	*	*
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1,000	9,845	0.03%	*	0.05%	0.01%	*	*	*
Industrial	Carbon and Graphite Product Manufacturing	335991	750	50,509	0.21%	*	0.32%	0.06%	*	*	*
Industrial	Automobile Manufacturing	336111	1,500	34,802	0.01%	*	*	*	*	0.00%	0.00%
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	1,500	50,509	0.00%	*	*	0.10%	*	*	0.00%
Industrial	Heavy Duty Truck Manufacturing	336120	1,500	43,731	0.01%	*	*	*	0.01%	0.00%	*
Industrial	Motor Vehicle Body Manufacturing	336211	1,000	43,731	0.28%	*	0.40%	0.08%	0.02%	*	*
Industrial	Truck Trailer Manufacturing	336212	1,000	9,845	0.05%	*	0.09%	0.02%	0.00%	*	*
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	1,000	18,153	0.05%	*	0.14%	0.02%	0.00%	*	*
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	500 (2007 Size Standards)	9,845	0.04%	*	*	*	*	*	*
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	750 (2007 Size Standards)	15,383	0.04%	*	*	*	*	*	*
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	1,000	18,153	0.04%	*	0.10%	0.02%	0.01%	*	*
Industrial	Motor Vehicle Brake System Manufacturing	336340	1,250	9,845	0.02%	*	0.04%	0.01%	0.00%	*	*
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	1,500	18,153	0.03%	*	0.07%	0.01%	0.01%	0.00%	*
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1,500	9,845	0.02%	*	0.05%	0.01%	0.00%	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Motor Vehicle Metal Stamping	336370	1,000	9,845	0.03%	0.47%	0.06%	0.01%	0.00%	0.00%	*
Industrial	Other Motor Vehicle Parts Manufacturing	336390	1,000	34,282	0.09%	1.30%	0.17%	0.03%	0.01%	0.00%	*
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	750 (2007 Size Standards)	18,153	0.05%	*	*	*	*	*	*
Industrial	Aircraft Manufacturing	336411	1,500	96,078	0.02%	*	0.97%	0.10%	0.03%	0.01%	0.00%
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	1,500	43,731	0.05%	2.16%	0.33%	0.05%	0.01%	0.01%	0.00%
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	1,250	38,891	0.10%	*	0.29%	0.05%	0.02%	*	0.00%
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1,250	9,845	0.01%	*	*	*	*	0.00%	*
Industrial	Railroad Rolling Stock Manufacturing	336510	1,500	9,845	0.01%	*	0.04%	0.01%	0.00%	*	*
Industrial	Ship Building and Repairing	336611	1,250	42,979	0.12%	2.90%	0.40%	0.07%	0.03%	0.01%	0.00%
Industrial	Boat Building	336612	1,000	72,718	0.87%	*	0.71%	0.12%	0.06%	*	*
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	1,500	18,153	0.01%	*	*	0.02%	*	*	*
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	750	9,571	0.59%	*	*	0.03%	0.01%	*	*
Industrial	Upholstered Household Furniture Manufacturing	337121	1,000	18,153	0.21%	*	*	0.05%	0.01%	*	*
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	750	43,731	2.49%	*	0.77%	0.15%	*	*	*
Industrial	Institutional Furniture Manufacturing	337127	500	9,845	0.14%	*	0.14%	0.03%	*	*	*
Industrial	Wood Office Furniture Manufacturing	337211	1,000	43,731	0.62%	*	0.61%	0.09%	*	*	*
Industrial	Office Furniture (except Wood) Manufacturing	337214	1,000	25,094	0.07%	*	0.28%	0.04%	0.01%	*	*
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	500	9,845	0.16%	*	0.12%	0.02%	0.01%	*	*
Industrial	Blind and Shade Manufacturing	337920	1,000	9,845	0.19%	*	0.12%	0.03%	*	*	*
Industrial	Surgical and Medical Instrument Manufacturing	339112	1,000	18,153	0.06%	*	*	0.02%	0.01%	0.00%	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Surgical Appliance and Supplies Manufacturing	339113	750	9,845	0.05%	*	*	0.01%	0.00%	0.00%	*
Industrial	Jewelry and Silverware Manufacturing	339910	500	9,845	0.26%	1.48%	0.11%	*	*	*	*
Industrial	Sporting and Athletic Goods Manufacturing	339920	750	9,845	0.15%	1.33%	0.10%	0.02%	0.00%	0.00%	*
Industrial	Office Supplies (except Paper) Manufacturing	339940	750	9,845	0.18%	*	0.11%	0.01%	*	*	*
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	500	18,153	0.15%	*	0.17%	0.04%	0.01%	*	*
Industrial	Burial Casket Manufacturing	339995	1,000	18,153	0.26%	*	*	*	*	*	*
Industrial	All Other Miscellaneous Manufacturing	339999	500	56,521	2.77%	11.08%	0.84%	0.08%	*	*	*
Commercial	Grain and Field Bean Merchant Wholesalers	424510	200	9,845	0.02%	0.04%	0.01%	*	*	*	*
Commercial	Petroleum Bulk Stations and Terminals	424710	200	56,521	0.03%	0.08%	0.02%	*	*	*	*
Commercial	Scheduled Passenger Air Transportation	481111	1,500	18,153	0.02%	0.36%	0.07%	*	*	*	*
Commercial	Line-Haul Railroads	482111	1,500	9,845	*	*	*	*	*	*	*
Energy	Pipeline Transportation of Crude Oil	486110	1,500	9,845	0.09%	0.24%	0.04%	*	*	*	*
Energy	Pipeline Transportation of Natural Gas	486210	\$27.5 million	8,736	0.08%	0.18%	0.03%	*	*	*	*
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1,500	9,845	0.09%	0.29%	*	*	*	*	*
Commercial	Support Activities for Rail Transportation	488210	\$15 million	18,153	0.46%	1.64%	0.26%	*	*	*	*
Commercial	Marine Cargo Handling	488320	\$38.5 million	18,153	0.09%	0.60%	0.10%	*	*	*	*
Commercial	General Warehousing and Storage	493110	\$27.5 million	20,259	1.14%	2.34%	0.71%	*	*	*	*
Commercial	Other Warehousing and Storage	493190	\$27.5 million	56,521	2.27%	8.29%	1.64%	*	*	*	*
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	\$27.5 million	9,845	0.34%	0.57%	0.04%	*	*	*	*
Commercial	Testing Laboratories	541380	\$15 million	18,153	0.76%	2.10%	0.32%	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	1,000	18,153	*	*	*	*	*	*	*
Commercial	All Other Support Services	561990	\$11 million	9,845	0.63%	1.33%	0.19%	*	*	*	*
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	\$38.5 million	79,412	0.97%	4.66%	0.69%	*	*	*	*
Waste Treatment	Solid Waste Landfill	562212	\$38.5 million	85,545	2.05%	3.98%	0.64%	*	*	*	*
Waste Treatment	Solid Waste Combustors and Incinerators	562213	\$38.5 million	15,383	0.07%	*	0.05%	*	*	*	*
Waste Treatment	Remediation Services	562910	\$20.5 million	9,845	0.27%	0.86%	0.14%	*	*	*	*
Educational Services	Colleges, Universities, and Professional Schools	611310	\$27.5 million	38,142	*	*	*	*	*	*	*
Commercial	Amusement and Theme Parks	713110	\$38.5 million	9,845	0.03%	0.42%	0.13%	*	*	*	*
Commercial	Linen and Uniform Supply	812330	NA	9,845	*	*	*	*	*	*	*
Commercial	Industrial Launderers	812332	\$38.5 million	18,153	0.32%	1.22%	0.30%	*	*	*	*

Notes:

Blanks in “Average Avoided Cost/Entity” column are for NAICS where zero facilities are projected to obtain area source status. NA means it is not a valid 2012 NAICS code, thus an SBA Size Standard is not available.

*No receipts data available from Census; cost-to-sales ratios cannot be calculated.

For Source Category “Pulp & Paper (non-combust) MACT” (NAICS 322121) that is assessed using an extrapolated approach, one facility is extrapolated to obtain area source status. However, in the estimation of Extrapolated Costs (Savings) “No facilities are expected to be area sources” and therefore these costs (savings) are estimated as zero. We make the same assumption for this category in our calculation of Extrapolated Costs (Savings) in Year 1 without state permitting costs.

**Zero facilities projected to obtain area source status and no projected net costs (savings); cost-to-sales ratios cannot be calculated.

***Denotes a data status as a combination of footnotes * and **.

Sources: 2012 Economic Census, 2012 County Business Patterns, 2017 SBA Size Standards, Federal Reserve Bank of St. Louis Economic Research, Eastern Research Group. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD. May, 2019. SBA February 2016 Size Standards, SBA 2007 Size Standards.

Table 6-9 Avoided Cost to Sales in Year 2 under the Alternative Scenario 2

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	\$27.5 million	14,813	*	*	*	*	*	*	*
Energy	Crude Petroleum and Natural Gas Extraction	211111	1,250 (Feb 2016 Size Standards)	9,950	0.02%	*	0.01%	0.00%	0.00%	0.00%	*
Energy	Natural Gas Liquid Extraction	211112	750 (Feb 2016 Size Standards)	39,781	0.03%	0.07%	0.03%	0.01%	0.00%	*	*
Industrial	Iron Ore Mining	212210	750	23,121	0.01%	*	0.16%	0.01%	*	*	*
Industrial	Lead Ore and Zinc Ore Mining	212231	750 (Feb 2016 Size Standards)	14,813	0.01%	*	*	*	*	*	*
Industrial	Copper Ore and Nickel Ore Mining	212234	1,500 (Feb 2016 Size Standards)	14,813	0.01%	*	*	*	0.00%	*	*
Industrial	All Other Metal Ore Mining	212299	750	14,813	0.02%	*	*	0.01%	*	*	*
Industrial	Industrial Sand Mining	212322	500	23,121	0.18%	0.55%	0.12%	0.03%	*	*	*
Industrial	Kaolin and Ball Clay Mining	212324	750	23,121	0.08%	*	0.18%	0.03%	*	*	*
Industrial	Potash, Soda, and Borate Mineral Mining	212391	750	61,489	0.05%	*	*	*	0.01%	*	*
Industrial	All Other Nonmetallic Mineral Mining	212399	500	14,813	0.35%	*	0.18%	*	*	*	*
Energy	Support Activities for Oil and Gas Operations	213112	\$38.5 million	23,121	0.25%	1.08%	0.25%	0.05%	0.01%	0.00%	*
Utilities	Hydroelectric Power Generation	221111	500	14,813	0.24%	*	*	*	*	*	*
Utilities	Fossil Fuel Electric Power Generation	221112	750	38,981	0.07%	*	*	*	*	*	*
Utilities	Biomass Electric Power Generation	221117	250	61,489	0.88%	*	*	*	*	*	*
Utilities	Other Electric Power Generation	221118	250	14,813	0.59%	*	*	*	*	*	*
Utilities	Other Electric Power Generation [^]	221119	4 million MWH (2007 Size Standards)	55,477	0.53%	*	*	*	*	*	*
Utilities	Electric Power Distribution	221122	1,000	14,813	0.04%	*	*	*	*	*	*
Utilities	Natural Gas Distribution	221210	1,000	43,859	0.11%	*	*	*	*	*	*
Utilities	Water Supply and Irrigation Systems	221310	\$27.5 million	23,121	0.96%	*	*	*	*	*	*
Utilities	Sewage Treatment Facilities	221320	\$20.5 million	22,360	1.12%	*	*	*	*	*	*
Utilities	Steam and Air-Conditioning Supply	221330	\$15 million	33,101	0.21%	*	*	*	*	*	*
Industrial	Other Animal Food Manufacturing	311119	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Wet Corn Milling	311221	1,250		**	*,**	**	**	*,**	*,**	*,**

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20-99	100~499	500~999	1000~2499	≥2500
Industrial	Soybean Processing^	311222	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Other Oilseed Processing^	311223	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Soybean and Other Oilseed Processing	311224	1,000	37,330	0.01%	*	0.01%	*	*	*	*
Industrial	Fats and Oils Refining and Blending	311225	1,000		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Beet Sugar Manufacturing	311313	750		**	*,**	*,**	*,**	**	*,**	*,**
Industrial	Cane Sugar Manufacturing	311314	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Fruit and Vegetable Canning	311421	1,000		**	*,**	**	**	*,**	*,**	*,**
Industrial	Specialty Canning	311422	1,250		**	*,**	*,**	*,**	**	*,**	*,**
Industrial	Cheese Manufacturing	311513	1,250		**	**	**	**	**	**	*,**
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Rendering and Meat Byproduct Processing	311613	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Commercial Bakeries	311812	1,000		**	*,**	**	**	**	*,**	*,**
Industrial	Other Snack Food Manufacturing	311919	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	Coffee and Tea Manufacturing	311920	750		**	*,**	**	**	*,**	*,**	*,**
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1,000		**	*,**	*,**	**	*,**	*,**	*,**
Industrial	Spice and Extract Manufacturing	311942	500		**	*,**	**	**	*,**	*,**	*,**
Industrial	All Other Miscellaneous Food Manufacturing	311999	500		**	*,**	**	**	**	*,**	*,**
Industrial	Breweries	312120	1,250	23,121	0.07%	*	0.15%	*	*	*	*
Industrial	Distilleries	312140	1,000	14,813	0.04%	*	*	*	*	*	*
Industrial	Tobacco Manufacturing	312230	1,500	14,813	0.00%	*	*	0.00%	0.00%	*	*
Industrial	Yarn Spinning Mills^	313111	500 (2007 Size Standards)	14,813	0.06%	*	*	*	*	*	*
Industrial	Thread Mills^	313113	500 (2007 Size Standards)	14,813	0.23%	*	*	*	*	*	*
Industrial	Broadwoven Fabric Mills	313210	1,000	23,121	0.17%	*	0.19%	0.05%	0.02%	*	*
Industrial	Narrow Fabric Mills^	313221	500 (2007 Size Standards)	14,813	0.23%	*	*	*	*	*	*
Industrial	Textile and Fabric Finishing Mills	313310	1,000	14,813	0.24%	*	0.12%	0.03%	*	*	*
Industrial	Broadwoven Fabric Finishing Mills^	313311	1,000 (2007 Size Standards)	23,121	0.34%	*	*	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Fabric Coating Mills	313320	1,000	19,016	0.15%	*	0.10%	*	*	*	*
Industrial	Tire Cord and Tire Fabric Mills^	314992	1,000 (2007 Size Standards)	14,813	0.02%	*	*	*	*	*	*
Industrial	Leather and Hide Tanning and Finishing	316110	500	9,943	0.12%	*	0.04%	0.02%	*	*	*
Industrial	Sawmills	321113	500	39,277	0.59%	2.91%	0.30%	0.08%	*	*	*
Industrial	Wood Preservation	321114	500	23,121	0.22%	*	0.09%	*	*	*	*
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	500	23,121	0.21%	*	*	0.05%	*	*	*
Industrial	Softwood Veneer and Plywood Manufacturing	321212	1,250	36,607	0.08%	*	*	0.05%	0.02%	*	*
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	750	61,489	0.71%	*	*	0.09%	*	*	*
Industrial	Reconstituted Wood Product Manufacturing	321219	750	31,866	0.11%	*	*	0.04%	*	*	*
Industrial	Wood Window and Door Manufacturing	321911	1,000	23,121	0.28%	*	*	0.05%	*	*	*
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	500	23,121	0.37%	1.55%	0.21%	*	*	*	*
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	500	23,121	0.77%	2.63%	0.25%	0.05%	*	*	*
Industrial	Pulp Mills	322110	750		**	*,**	*,**	**	**	*,**	*,**
Industrial	Paper (except Newsprint) Mills	322121	1,250	109,207	0.04%	*	*	0.05%	0.02%	0.01%	*
Industrial	Newsprint Mills	322122	750		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Paperboard Mills	322130	1,250		**	*,**	*,**	**	**	*,**	*,**
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	1,250	21,172	0.08%	0.64%	0.09%	0.03%	*	*	*
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	750		**	*,**	**	**	**	*,**	*,**
Industrial	Coated and Laminated Paper Manufacturing^	322222	500 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Sanitary Paper Product Manufacturing	322291	1,500		**	*,**	*,**	**	**	*,**	*,**
Industrial	All Other Converted Paper Product Manufacturing	322299	500		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Commercial Lithographic Printing^	323110	500 (2007 Size Standards)	14,813	0.38%	*	*	*	*	*	*
Industrial	Commercial Printing (except Screen and Books)	323111	500	16,728	0.50%	*	0.20%	0.04%	0.01%	*	*
Industrial	Books Printing	323117	1,250	23,121	0.25%	*	*	0.05%	0.02%	*	*
Industrial	Petroleum Refineries	324110	1,500	177,464	0.00%	*	0.07%	0.01%	*	0.00%	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	750	14,813	0.03%	*	0.02%	*	*	*	*
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	500	14,813	0.03%	*	0.02%	*	*	*	*
Industrial	Petrochemical Manufacturing	325110	1,000	6,363	0.00%	*	*	0.00%	*	*	*
Industrial	Industrial Gas Manufacturing	325120	1,000	14,813	0.09%	0.22%	0.06%	*	*	*	*
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1,000		**	*,**	**	**	*,**	*,**	*,**
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	1,000 (2007 Size Standards)	14,813	0.02%	*	*	*	*	*	*
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	1,000	20,351	0.04%	*	0.04%	0.01%	0.00%	*	*
Industrial	Alkalies and Chlorine Manufacturing^	325181	1,000 (2007 Size Standards)	18,684	0.01%	*	*	*	*	*	*
Industrial	Carbon Black Manufacturing^	325182	500 (2007 Size Standards)	12,020	0.01%	*	*	*	*	*	*
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	1,000 (2007 Size Standards)	9,928	0.02%	*	*	*	*	*	*
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	750 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Ethyl Alcohol Manufacturing	325193	1,000	20,351	0.01%	*	0.01%	0.00%	*	*	*
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	1,250		**	*,**	**	**	*,**	*,**	*,**
Industrial	All Other Basic Organic Chemical Manufacturing	325199	1,250	53,299	0.05%	*	0.09%	0.02%	0.00%	0.00%	*
Industrial	Plastics Material and Resin Manufacturing	325211	1,250	147,600	0.18%	*	0.34%	0.04%	0.01%	0.01%	*
Industrial	Synthetic Rubber Manufacturing	325212	1,000	2,886	0.00%	*	0.01%	*	*	*	*
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	1,000	23,121	0.03%	*	0.10%	0.02%	0.00%	*	*
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1,000 (2007 Size Standards)		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	1,000 (2007 Size Standards)	133,699	0.21%	*	*	*	*	*	*
Industrial	Nitrogenous Fertilizer Manufacturing	325311	1,000	43,859	0.08%	*	0.08%	*	*	*	*
Industrial	Phosphatic Fertilizer Manufacturing	325312	750	20,351	0.01%	*	*	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	1,000	55,357	0.07%	*	0.09%	0.02%	*	*	*
Industrial	Medicinal and Botanical Manufacturing	325411	1,000	14,813	0.05%	*	0.09%	0.02%	0.00%	*	*
Industrial	Pharmaceutical Preparation Manufacturing	325412	1,250	130,795	0.11%	*	*	0.04%	0.02%	0.01%	*
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1,250		**	*,**	*,**	**	**	**	*,**
Industrial	Paint and Coating Manufacturing	325510	1,000	122,711	0.57%	*	0.41%	0.09%	*	*	*
Industrial	Adhesive Manufacturing	325520	500	14,813	0.06%	0.35%	0.05%	0.01%	*	*	*
Industrial	Surface Active Agent Manufacturing	325613	750		**	*,**	**	*,**	*,**	*,**	*,**
Industrial	Toilet Preparation Manufacturing	325620	1,250		**	**	**	**	**	**	*,**
Industrial	Explosives Manufacturing	325920	750		**	*,**	*,**	*,**	*,**	*,**	*,**
Industrial	Custom Compounding of Purchased Resins	325991	500	23,121	0.10%	*	0.08%	0.02%	*	*	*
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	1,500	14,813	0.05%	*	0.07%	0.01%	*	*	*
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	500	20,351	0.11%	0.65%	0.07%	0.02%	0.01%	*	*
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	1,000	61,489	0.19%	1.97%	0.30%	0.08%	*	*	*
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	750	36,806	0.12%	*	0.17%	0.04%	0.01%	*	*
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	500	14,813	0.09%	*	0.12%	0.03%	*	*	*
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	750	14,813	0.07%	0.34%	0.06%	0.02%	*	*	*
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	500	52,154	0.34%	*	0.33%	*	*	*	*
Industrial	Polystyrene Foam Product Manufacturing	326140	1,000	14,813	0.07%	*	0.09%	0.02%	0.01%	*	*
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	750	5,478	0.04%	*	0.03%	0.01%	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Plastics Plumbing Fixture Manufacturing	326191	750	23,121	0.30%	*	0.24%	*	*	*	*
Industrial	All Other Plastics Product Manufacturing	326199	750	37,478	0.29%	2.51%	0.33%	0.07%	0.02%	0.01%	*
Industrial	Tire Manufacturing (except Retreading)	326211	1,500	34,876	0.02%	*	*	0.02%	0.01%	0.00%	*
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	750	61,489	0.29%	*	*	0.09%	0.04%	*	*
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	750	23,121	0.14%	*	*	0.04%	0.01%	*	*
Industrial	All Other Rubber Product Manufacturing	326299	500	42,305	0.26%	2.14%	0.29%	0.06%	*	*	*
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	1,000	16,148	0.48%	*	0.24%	0.04%	*	*	*
Industrial	Clay Building Material and Refractories Manufacturing	327120	750	23,121	0.25%	1.43%	0.22%	0.05%	*	*	*
Industrial	Clay Refractory Manufacturing^	327124	500 (2007 Size Standards)	22,421	0.24%	*	*	*	*	*	*
Industrial	Flat Glass Manufacturing	327211	1,000	23,121	0.04%	*	*	*	*	*	*
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	1,250	34,874	0.40%	*	*	*	0.02%	*	*
Industrial	Cement Manufacturing	327310	1,000	61,489	0.24%	*	*	*	*	*	*
Industrial	Lime Manufacturing	327410	750	22,485	0.09%	*	*	*	*	*	*
Industrial	Gypsum Product Manufacturing	327420	1,500	14,813	0.08%	*	0.05%	*	*	*	*
Industrial	Abrasive Product Manufacturing	327910	750	23,121	0.13%	1.03%	0.15%	0.02%	0.00%	*	*
Industrial	Mineral Wool Manufacturing	327993	1,500	51,915	0.28%	*	0.38%	0.06%	*	*	*
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	500	23,121	0.25%	*	0.15%	*	*	*	*
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	1,500	35,390	0.01%	*	*	0.01%	0.00%	0.00%	*
Industrial	Iron and Steel Mills^	331111	1,000 (2007 Size Standards)	48,699	0.02%	*	*	*	*	*	*
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	750 (2007 Size Standards)	14,813	0.01%	*	*	*	*	*	*
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	1,000	61,489	0.08%	1.25%	0.21%	0.06%	0.01%	0.01%	*
Industrial	Rolled Steel Shape Manufacturing	331221	1,000	61,489	0.19%	*	0.17%	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Primary Aluminum Production^	331312	1,000 (2007 Size Standards)	23,121	0.01%	*	*	*	*	*	*
Industrial	Alumina Refining and Primary Aluminum Production	331313	1,000	23,121	0.02%	*	0.05%	0.01%	0.00%	*	*
Industrial	Secondary Smelting and Alloying of Aluminum	331314	750	8,459	0.02%	*	0.02%	*	*	*	*
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	1,250	61,489	0.04%	*	*	0.03%	0.01%	*	*
Industrial	Aluminum Extruded Product Manufacturing^	331316	750 (2007 Size Standards)	14,813	0.04%	*	*	*	*	*	*
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	750	23,121	0.07%	*	*	0.03%	*	*	*
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1,000	14,813	0.02%	*	0.02%	*	0.00%	*	*
Industrial	Primary Smelting and Refining of Copper^	331411	1,000 (2007 Size Standards)		**	*, **	*, **	*, **	*, **	*, **	*, **
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	750 (2007 Size Standards)	14,813	0.03%	*	*	*	*	*	*
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	1,000	23,121	0.02%	*	0.03%	0.01%	0.00%	*	*
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1,000 (2007 Size Standards)	14,813	0.02%	*	*	*	*	*	*
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	750	23,121	0.09%	*	0.11%	0.03%	*	*	*
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	750	23,121	0.04%	*	0.04%	0.01%	*	*	*
Industrial	Iron Foundries	331511	1,000	27,132	0.10%	*	*	0.04%	0.01%	*	*
Industrial	Steel Foundries (except Investment)	331513	500	23,121	0.10%	*	0.20%	0.04%	0.01%	*	*
Industrial	Aluminum Die-Casting Foundries^	331521	500 (2007 Size Standards)	14,813	0.07%	*	*	*	*	*	*
Industrial	Aluminum Foundries (except Die-Casting)	331524	500	23,121	0.33%	*	0.32%	0.06%	*	*	*
Industrial	Nonferrous Forging	332112	750	14,813	0.03%	*	*	0.02%	0.00%	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	500	14,813	0.18%	1.09%	0.15%	0.03%	0.01%	*	*
Industrial	Hand and Edge Tool Manufacturing^	332212	500 (2007 Size Standards)	14,813	0.25%	*	*	*	*	*	*
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	750	14,813	0.15%	*	0.11%	0.03%	*	*	*
Industrial	Fabricated Structural Metal Manufacturing	332312	500	14,813	0.17%	*	0.11%	0.02%	*	*	*
Industrial	Metal Window and Door Manufacturing	332321	750	48,699	0.52%	*	0.49%	0.11%	0.03%	*	*
Industrial	Sheet Metal Work Manufacturing	332322	500	14,813	0.29%	1.12%	0.17%	0.04%	*	*	*
Industrial	Metal Can Manufacturing	332431	1,500	41,507	0.05%	*	0.07%	0.03%	*	*	*
Industrial	Other Metal Container Manufacturing	332439	500	20,351	0.19%	1.50%	0.13%	0.04%	0.01%	*	*
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	500	14,813	0.12%	1.01%	0.12%	0.03%	0.01%	*	*
Industrial	Metal Heat Treating	332811	750	14,813	0.18%	*	0.17%	*	*	*	*
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	500	41,903	0.78%	5.18%	0.42%	0.05%	*	*	*
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	500	20,351	0.66%	2.59%	0.35%	*	*	*	*
Industrial	Other Fabricated Metal Manufacturing	332990	NA	14,813	*	*	*	*	*	*	*
Industrial	Small Arms Ammunition Manufacturing	332992	1,250	14,813	0.04%	*	*	*	*	*	*
Industrial	Ammunition (except Small Arms) Manufacturing	332993	1,500	20,351	0.03%	*	*	*	*	*	*
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	750	20,351	0.51%	2.36%	0.26%	0.05%	0.01%	*	*
Industrial	Farm Machinery and Equipment Manufacturing	333111	1,250	55,477	0.17%	*	0.43%	0.06%	0.01%	0.01%	*
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1,500	14,813	0.03%	*	*	0.01%	0.00%	*	*
Industrial	Construction Machinery Manufacturing	333120	1,250	76,304	0.14%	*	0.51%	0.07%	0.01%	0.00%	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1,250	14,813	0.05%	*	*	0.03%	*	*	*
Industrial	Household Laundry Equipment Manufacturing	335224	1,250	28,514	*	*	*	*	*	*	*
Industrial	Other Major Household Appliance Manufacturing	335228	1,000	23,121	0.01%	*	*	*	0.01%	*	*
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	750	14,813	0.06%	*	0.11%	0.02%	0.01%	*	*
Industrial	Motor and Generator Manufacturing	335312	1,250	23,121	0.09%	*	0.21%	0.03%	*	*	*
Industrial	Storage Battery Manufacturing	335911	1,250	14,813	0.03%	*	*	0.02%	0.01%	*	*
Industrial	Current-Carrying Wiring Device Manufacturing	335931	500	14,813	0.09%	*	0.13%	0.03%	0.01%	*	*
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1,000	14,813	0.04%	*	0.07%	0.02%	*	*	*
Industrial	Carbon and Graphite Product Manufacturing	335991	750	55,477	0.23%	*	0.35%	0.07%	*	*	*
Industrial	Automobile Manufacturing	336111	1,500	39,770	0.01%	*	*	*	*	0.00%	0.00%
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	1,500	55,477	0.00%	*	*	0.10%	*	*	0.00%
Industrial	Heavy Duty Truck Manufacturing	336120	1,500	48,699	0.01%	*	*	*	0.01%	0.00%	*
Industrial	Motor Vehicle Body Manufacturing	336211	1,000	48,699	0.31%	*	0.45%	0.08%	0.02%	*	*
Industrial	Truck Trailer Manufacturing	336212	1,000	14,813	0.08%	*	0.14%	0.02%	0.01%	*	*
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	1,000	23,121	0.06%	*	0.18%	0.03%	0.00%	*	*
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	500 (2007 Size Standards)	14,813	0.06%	*	*	*	*	*	*
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	750 (2007 Size Standards)	20,351	0.05%	*	*	*	*	*	*
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	1,000	23,121	0.05%	*	0.13%	0.02%	0.01%	*	*
Industrial	Motor Vehicle Brake System Manufacturing	336340	1,250	14,813	0.03%	*	0.06%	0.01%	0.01%	*	*
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	1,500	23,121	0.03%	*	0.09%	0.02%	0.01%	0.00%	*
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1,500	14,813	0.03%	*	0.07%	0.01%	0.00%	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Motor Vehicle Metal Stamping	336370	1,000	14,813	0.04%	0.71%	0.10%	0.02%	0.01%	0.00%	*
Industrial	Other Motor Vehicle Parts Manufacturing	336390	1,000	39,250	0.10%	1.49%	0.19%	0.04%	0.01%	0.01%	*
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	750 (2007 Size Standards)	23,121	0.06%	*	*	*	*	*	*
Industrial	Aircraft Manufacturing	336411	1,500	101,046	0.02%	*	1.02%	0.11%	0.03%	0.01%	0.00%
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	1,500	48,699	0.06%	2.41%	0.37%	0.05%	0.01%	0.01%	0.00%
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	1,250	43,859	0.11%	*	0.32%	0.06%	0.02%	*	0.00%
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1,250	14,813	0.01%	*	*	*	*	0.00%	*
Industrial	Railroad Rolling Stock Manufacturing	336510	1,500	14,813	0.02%	*	0.06%	0.01%	0.00%	*	*
Industrial	Ship Building and Repairing	336611	1,250	47,947	0.13%	3.23%	0.45%	0.08%	0.03%	0.01%	0.00%
Industrial	Boat Building	336612	1,000	77,707	0.93%	*	0.76%	0.13%	0.06%	*	*
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	1,500	23,121	0.02%	*	*	0.03%	*	*	*
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	750	14,539	0.89%	*	*	0.04%	0.01%	*	*
Industrial	Upholstered Household Furniture Manufacturing	337121	1,000	23,121	0.26%	*	*	0.07%	0.02%	*	*
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	750	48,699	2.78%	*	0.86%	0.17%	*	*	*
Industrial	Institutional Furniture Manufacturing	337127	500	14,813	0.22%	*	0.20%	0.04%	*	*	*
Industrial	Wood Office Furniture Manufacturing	337211	1,000	48,699	0.69%	*	0.68%	0.10%	*	*	*
Industrial	Office Furniture (except Wood) Manufacturing	337214	1,000	30,062	0.09%	*	0.34%	0.05%	0.01%	*	*
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	500	14,813	0.24%	*	0.18%	0.04%	0.01%	*	*
Industrial	Blind and Shade Manufacturing	337920	1,000	14,813	0.29%	*	0.18%	0.04%	*	*	*
Industrial	Surgical and Medical Instrument Manufacturing	339112	1,000	23,121	0.08%	*	*	0.03%	0.01%	0.00%	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Industrial	Surgical Appliance and Supplies Manufacturing	339113	750	14,813	0.08%	*	*	0.02%	0.00%	0.00%	*
Industrial	Jewelry and Silverware Manufacturing	339910	500	14,813	0.39%	2.23%	0.16%	*	*	*	*
Industrial	Sporting and Athletic Goods Manufacturing	339920	750	14,813	0.23%	2.00%	0.14%	0.02%	0.01%	0.00%	*
Industrial	Office Supplies (except Paper) Manufacturing	339940	750	14,813	0.27%	*	0.17%	0.02%	*	*	*
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	500	23,121	0.19%	*	0.21%	0.04%	0.02%	*	*
Industrial	Burial Casket Manufacturing	339995	1,000	23,121	0.34%	*	*	*	*	*	*
Industrial	All Other Miscellaneous Manufacturing	339999	500	61,489	3.02%	12.05%	0.91%	0.08%	*	*	*
Commercial	Grain and Field Bean Merchant Wholesalers	424510	200	14,813	0.03%	0.06%	0.01%	*	*	*	*
Commercial	Petroleum Bulk Stations and Terminals	424710	200	61,489	0.03%	0.09%	0.02%	*	*	*	*
Commercial	Scheduled Passenger Air Transportation	481111	1,500	23,121	0.03%	0.46%	0.09%	*	*	*	*
Commercial	Line-Haul Railroads	482111	1,500	14,813	*	*	*	*	*	*	*
Energy	Pipeline Transportation of Crude Oil	486110	1,500	14,813	0.14%	0.36%	0.06%	*	*	*	*
Energy	Pipeline Transportation of Natural Gas	486210	\$27.5 million	13,704	0.12%	0.29%	0.04%	*	*	*	*
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1,500	14,813	0.13%	0.44%	*	*	*	*	*
Commercial	Support Activities for Rail Transportation	488210	\$15 million	23,121	0.59%	2.09%	0.33%	*	*	*	*
Commercial	Marine Cargo Handling	488320	\$38.5 million	23,121	0.12%	0.77%	0.12%	*	*	*	*
Commercial	General Warehousing and Storage	493110	\$27.5 million	25,227	1.42%	2.92%	0.89%	*	*	*	*
Commercial	Other Warehousing and Storage	493190	\$27.5 million	61,489	2.47%	9.02%	1.78%	*	*	*	*
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	\$27.5 million	14,813	0.51%	0.86%	0.06%	*	*	*	*
Commercial	Testing Laboratories	541380	\$15 million	23,121	0.96%	2.68%	0.41%	*	*	*	*
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	1,000	23,121	*	*	*	*	*	*	*

Sector	Source Category	NAICS	SBA Size Standard (2017)	Average Avoided Cost/Entity (2014\$)	Avoided Cost to Sales/Entity by Employee Size Categories (%)						
					All	≤19	20~99	100~499	500~999	1000~2499	≥2500
Commercial	All Other Support Services	561990	\$11 million	14,813	0.94%	2.00%	0.29%	*	*	*	*
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	\$38.5 million	84,380	1.03%	4.95%	0.74%	*	*	*	*
Waste Treatment	Solid Waste Landfill	562212	\$38.5 million	90,510	2.17%	4.21%	0.68%	*	*	*	*
Waste Treatment	Solid Waste Combustors and Incinerators	562213	\$38.5 million	20,351	0.09%	*	0.06%	*	*	*	*
Waste Treatment	Remediation Services	562910	\$20.5 million	14,813	0.41%	1.30%	0.21%	*	*	*	*
Educational Services	Colleges, Universities, and Professional Schools	611310	\$27.5 million	43,110	*	*	*	*	*	*	*
Commercial	Amusement and Theme Parks	713110	\$38.5 million	14,813	0.05%	0.63%	0.20%	*	*	*	*
Commercial	Linen and Uniform Supply	812330	NA	14,813	*	*	*	*	*	*	*
Commercial	Industrial Launderers	812332	\$38.5 million	23,121	0.41%	1.55%	0.38%	*	*	*	*

Notes:

Blanks in “Average Avoided Cost/Entity” column are for NAICS where zero facilities are projected to obtain area source status. NA means it is not a valid 2012 NAICS code, thus an SBA Size Standard is not available.

*No receipts data available from Census; cost-to-sales ratios cannot be calculated.

**Zero facilities projected to obtain area source status and no projected net costs (savings); cost-to-sales ratios cannot be calculated.

***Denotes a data status as a combination of footnotes * and **.

Sources: 2012 Economic Census, 2012 County Business Patterns, 2017 SBA Size Standards, Federal Reserve Bank of St. Louis Economic Research, Eastern Research Group. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD. May, 2019. SBA February 2016 Size Standards, SBA 2007 Size Standards.

6.6 Comparison of the Percentile Results for Each Scenario

As depicted in Table 6-10 below, the year 1 and 2 percentile results across all employment size categories are similar across the three scenarios with year 1 showing more similarity across scenarios than year 2. In year 1 the twenty-fifth percentiles are 0.01 for each scenario, the medians are 0.04% for alternative scenario 1 and 0.05% for both the primary scenario and alternative scenario 2, and the seventy-fifth percentiles are 0.14% for alternative scenario 1 and 0.16% for both the primary scenario and alternative scenario 2. In year 2 the twenty-fifth percentiles are 0.02% for both the primary scenario and alternative scenario 2 and 0.03% for alternative scenario 1, the medians are 0.06 % for each scenario, and the seventy-fifth percentiles are between 0.21% and 0.23% for the three scenarios (0.21% for alternative scenario 2, 0.22% for the primary scenario and 0.23% for alternative scenario 1).

Table 6-10 Cost-to-Sales Ratios Percentile Results for the Three Scenarios

	Primary Scenario		Alternative Scenario 1		Alternative Scenario 2	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
25th Percentile	0.01%	0.02%	0.01%	0.03%	0.01%	0.02%
50th Percentile (Median)	0.05%	0.06%	0.04%	0.06%	0.05%	0.06%
75th Percentile	0.16%	0.22%	0.14%	0.23%	0.16%	0.21%

Note:

The year 2 percentile results are for year 2 and are also the annual results for years thereafter.

Sources: 2012 Economic Census, 2012 County Business Patterns, 2017 SBA Size Standards, SBA February 2016 Size Standards, SBA 2007 Size Standards, Federal Reserve Bank of St. Louis Economic Research, Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources. Memorandum for U.S. EPA/OAQPS/SPPD.

7. LIMITATIONS AND UNCERTAINTIES

The costs and economic impacts estimated in this RIA are subject to limitations and uncertainties. The most prominent uncertainty is that the EPA does not know what sources will take advantage of the opportunity to reclassify to area source status. The original 2007 proposal did not provide analyses of removing the OIAI because it was stated that impacts could not be quantified without knowing which sources will avail themselves of the regulatory provisions proposed in this rule and what methods of HAP emission reductions will be used. In addition, the 2007 proposal also indicated, “It is unknown how many sources would choose to take permit conditions that would limit their PTE to below major source levels.” Within this group, it also is not known how many sources may increase their emissions from the major source MACT level (assuming the level is below the major source thresholds). Similarly, we cannot identify or quantify the universe of sources that would decrease their HAP emissions to below the level required by the NESHAP to achieve area source status.

The proposed rule provides potential regulatory relief (*i.e.*, the avoided costs) to affected major sources. Regulatory relief estimates as measured by avoided costs are provided for years 1 and 2 after promulgation of this rulemaking. The avoided costs are based on the best data available currently regarding sources affected and burden cost estimates but are subject to uncertainties.

This RIA is limited in its analyses because it estimates administrative burden reduction and some economic impact as measured by avoided cost-to-sales ratios, and we are unable to provide a quantitative estimate of benefits or disbenefits as explained in the benefits section of this RIA. The analysis does not measure costs or cost savings related to changes in the use of control equipment (*e.g.*, decrease in control device operating and maintenance costs due to reduced device use) except for potential control cost impacts associated with the illustrative 125% scenario as presented in Chapter 4 and does not provide quantitative estimates of changes in benefits.

In addition, the analysis presumes a zero probability of an area source reclassifying to major status after the source has reclassified to area. Moreover, because these estimates presume a fixed state of the affected industries, it does not capture the potential for increased entry into affected markets because of the alleviated regulatory burden. This could subsequently induce

additional regulatory costs on new firms and state regulatory agencies. With these considerations in mind, the cost savings estimates in the RIA may serve as an upper bound.

7.1 Avoided Cost Estimate Limitations and Uncertainties

7.1.1 Uncertainties in Estimates of Affected Sources

These estimates presume that the number of sources in the RTR modeling files is an accurate indication of the number of sources and their HAP emissions for source categories currently and in the near future. Some of the RTR modeling files contain emissions and source data that are several years old. In addition, the NEI data used to estimate the number of affected sources for some source categories are from 2014. Changes in the source categories due to mergers and acquisitions and other economic factors since then may mean some differences between the information used in the analysis and numbers of sources in these categories currently and in the near future.

7.1.2 Uncertainties in Permitting Costs

The permitting costs used in the cost analysis to generate the cost savings estimates are average values across sources. Thus, there may be variation in such costs by source category at the source level that this analysis may not capture. In addition, the costs in the ICRs used in the cost savings analysis may reflect older source-level data that may differ from current and near-term data. These uncertainties are relevant for the estimates of PV and EAV for each scenario as well as the estimates of reduced administrative burden provided by the May, 2019 ERG Cost Analysis Memorandum.

7.2 Economic Impact Limitations and Uncertainties

There is uncertainty in the estimates of sources affected by this proposed rule and the burden costs used to estimate the regulatory relief from this rule. These uncertainties also affect the economic impact analysis conducted. The economic impact analysis compares the avoided burden cost estimates with average industry revenues to gauge the impact of the proposed MM2A rule for affected sources. We used average industry revenue and average establishment revenue estimates by entity size to estimate the avoided cost-to-sales ratios. The actual impacts to individual entities affected by this policy change may differ from industry averages.

The average entity costs used to compute the sales test vary across sources but are the same across establishment size categories. As a result, the sales test will likely overstate the cost-to-receipt ratio for establishments owned by small businesses.

In addition, a major assumption in the estimation of potential cost savings is that all major sources in each source category that can reclassify to an area source will do so subject to a HAP PTE limits. It is possible that major sources may choose not to reclassify based on cost savings not being a sufficient incentive to do so, or for other reasons (*e.g.*, companies concerned with their environmental reputation).

7.3 Economic Impact Data Limitations and Uncertainties

Using the 2012 Economic Census, we collected and organized data on number of establishments, employment, and receipts for affected sources represented by NAICS codes. However, because of confidentiality issues, some data values were not available or reported with a range of values. In addition, some NAICS codes were not valid 2012 NAICS codes, and either no data were reported for them in the 2012 Economic Census or limited data were reported not broken down by size categories. These data limitations prevented us from reporting avoided cost-to-sales ratios for every employment size category for some NAICS codes. Table 7-1 lists these data limitations by NAICS code.

Table 7-1 Data Limitations for Specific NAICS Codes

NAICS	Data Limitations
115114	Not covered in Economic Census, used 2012 County Business Patterns (no revenue data)
221119	2007 NAICS: Data only available for all establishments in 2012 Economic Census (no data for employment size categories)
311222	2007 NAICS: Data only available for all establishments in 2012 Economic Census (no data for employment size categories)
311223	2007 NAICS: Data only available for all establishments in 2012 Economic Census (no data for employment size categories)
313111	2007 NAICS: Data only available for all establishments in 2012 Economic Census (no data for employment size categories)
313113	2007 NAICS: Data only available for all establishments in 2012 Economic Census (no data for employment size categories)
313221	2007 NAICS: Data only available for all establishments in 2012 Economic Census (no data for employment size categories)
313311	2007 NAICS: Data only available for all establishments in 2012 Economic Census (no data for employment size categories)
314992	2007 NAICS: Data only available for all establishments in 2012 Economic Census (no data for employment size categories)

NAICS	Data Limitations
336312	2007 NAICS: Data only available for all establishments in 2012 Economic Census (no data for employment size categories)
336399	2007 NAICS: Data only available for all establishments in 2012 Economic Census (no data for employment size categories)
482111	Not covered in Economic Census
541715	2017 NAICS: Not covered in 2012 Economic Census
611310	Not covered in Economic Census, used 2012 County Business Patterns (no revenue data)
812330	Invalid NAICS Code
922140	Not covered in Economic Census
927110	Not covered in Economic Census
928110	Not covered in Economic Census
999999	Unclassified NAICS

Sources: 2012 Economic Census, 2012 County Business Patterns.

The underlying establishment and receipts data are a limiting factor because if either of these measures is not reported for a certain category, we cannot calculate the average receipts per establishment, which is needed for the avoided cost-to-sales ratio calculation. However, there are cases where avoided cost-to-sales ratios are not reported because zero facilities are projected to obtain area source status; therefore, there are no facilities to calculate the average cost per entity.

This RIA estimates administrative burden reduction and some economic impact as measured by avoided cost-to-sales ratios. The analysis does not measure costs or cost savings related to control equipment changes and does not provide quantitative estimates of emission changes and benefits.

7.4 Benefits Limitations and Uncertainties

We are uncertain as to the distribution of the changes in HAP and other emissions across the broad array of sources impacted by this proposal. As such, we are unable to quantify the changes in emissions across these sources and cannot either simulate the change in air quality or characterize the impact of these changes to human health. This is not to imply that changes in emissions will not affect human health. Rather, our approach reflects the challenges associated with modeling the direct and indirect impacts of the reductions in emissions for these sectors with the data currently available. In place of quantitative estimates of the quantity and economic value of the pollutant changes, we instead characterize these impacts in qualitative terms.

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ATTACHMENT A
SECTORS AND SOURCE CATEGORIES AFFECTED BY THE PROPOSED MM2A
RULE

Table A-1 Sources Expected to Experience Regulatory Relief under the Primary Scenario

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	1	1
Energy	Crude Petroleum and Natural Gas Extraction	211111	120	64
Energy	Natural Gas Liquid Extraction	211112	26	15
Industrial	Iron Ore Mining	212210	9	2
Industrial	Lead Ore and Zinc Ore Mining	212231	1	1
Industrial	Copper Ore and Nickel Ore Mining	212234	1	1
Industrial	All Other Metal Ore Mining	212299	1	1
Industrial	Industrial Sand Mining	212322	3	2
Industrial	Kaolin and Ball Clay Mining	212324	3	2
Industrial	Potash, Soda, and Borate Mineral Mining	212391	6	4
Industrial	All Other Nonmetallic Mineral Mining	212399	1	1
Energy	Support Activities for Oil and Gas Operations	213112	3	2
Utilities	Hydroelectric Power Generation	221111	1	1
Utilities	Fossil Fuel Electric Power Generation	221112	334	72
Utilities	Biomass Electric Power Generation	221117	5	4
Utilities	Other Electric Power Generation	221118	1	1
Utilities	Other Electric Power Generation^	221119	8	5
Utilities	Electric Power Distribution	221122	1	1
Utilities	Natural Gas Distribution	221210	13	7
Utilities	Water Supply and Irrigation Systems	221310	2	2
Utilities	Sewage Treatment Facilities	221320	19	10
Utilities	Steam and Air-Conditioning Supply	221330	22	12
Industrial	Other Animal Food Manufacturing	311119	1	0
Industrial	Wet Corn Milling	311221	16	2
Industrial	Soybean Processing^	311222	16	2
Industrial	Other Oilseed Processing^	311223	5	0
Industrial	Soybean and Other Oilseed Processing	311224	116	14
Industrial	Fats and Oils Refining and Blending	311225	2	0
Industrial	Beet Sugar Manufacturing	311313	11	1
Industrial	Cane Sugar Manufacturing	311314	3	0
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	2	0
Industrial	Fruit and Vegetable Canning	311421	1	0
Industrial	Specialty Canning	311422	2	0
Industrial	Cheese Manufacturing	311513	2	0
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	3	0
Industrial	Rendering and Meat Byproduct Processing	311613	1	0
Industrial	Commercial Bakeries	311812	2	0
Industrial	Other Snack Food Manufacturing	311919	1	0
Industrial	Coffee and Tea Manufacturing	311920	1	0

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1	0
Industrial	Spice and Extract Manufacturing	311942	4	0
Industrial	All Other Miscellaneous Food Manufacturing	311999	6	0
Industrial	Breweries	312120	3	2
Industrial	Distilleries	312140	1	1
Industrial	Tobacco Manufacturing	312230	1	1
Industrial	Yarn Spinning Mills^	313111	1	1
Industrial	Thread Mills^	313113	1	1
Industrial	Broadwoven Fabric Mills	313210	2	2
Industrial	Narrow Fabric Mills^	313221	1	1
Industrial	Textile and Fabric Finishing Mills	313310	1	1
Industrial	Broadwoven Fabric Finishing Mills^	313311	3	2
Industrial	Fabric Coating Mills	313320	50	29
Industrial	Tire Cord and Tire Fabric Mills^	314992	1	1
Industrial	Leather and Hide Tanning and Finishing	316110	6	5
Industrial	Sawmills	321113	61	43
Industrial	Wood Preservation	321114	3	2
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	3	2
Industrial	Softwood Veneer and Plywood Manufacturing	321212	29	21
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	6	4
Industrial	Reconstituted Wood Product Manufacturing	321219	284	205
Industrial	Wood Window and Door Manufacturing	321911	4	2
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	4	2
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	3	2
Industrial	Pulp Mills	322110	18	0
Industrial	Paper (except Newsprint) Mills	322121	281	0
Industrial	Newsprint Mills	322122	7	0
Industrial	Paperboard Mills	322130	36	0
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	213	132
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	17	0
Industrial	Coated and Laminated Paper Manufacturing^	322222	12	0
Industrial	Sanitary Paper Product Manufacturing	322291	2	0
Industrial	All Other Converted Paper Product Manufacturing	322299	1	0
Industrial	Commercial Lithographic Printing^	323110	1	1
Industrial	Commercial Printing (except Screen and Books)	323111	188	110
Industrial	Books Printing	323117	3	2
Industrial	Petroleum Refineries	324110	424	149
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	3	0
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	4	0
Industrial	Petrochemical Manufacturing	325110	597	238

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Industrial Gas Manufacturing	325120	4	1
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1	0
Industrial	Inorganic Dye and Pigment Manufacturing [^]	325131	3	1
Industrial	Synthetic Organic Dye and Pigment Manufacturing [^]	325132	2	0
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	10	3
Industrial	Alkalies and Chlorine Manufacturing [^]	325181	4	1
Industrial	Carbon Black Manufacturing [^]	325182	21	8
Industrial	All Other Basic Inorganic Chemical Manufacturing [^]	325188	93	35
Industrial	Cyclic Crude and Intermediate Manufacturing [^]	325192	1	0
Industrial	Ethyl Alcohol Manufacturing	325193	7	2
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	2	0
Industrial	All Other Basic Organic Chemical Manufacturing	325199	77	24
Industrial	Plastics Material and Resin Manufacturing	325211	833	307
Industrial	Synthetic Rubber Manufacturing	325212	24	4
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	6	2
Industrial	Cellulosic Organic Fiber Manufacturing [^]	325221	1	0
Industrial	Noncellulosic Organic Fiber Manufacturing [^]	325222	8	3
Industrial	Nitrogenous Fertilizer Manufacturing	325311	16	6
Industrial	Phosphatic Fertilizer Manufacturing	325312	30	2
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	22	6
Industrial	Medicinal and Botanical Manufacturing	325411	4	1
Industrial	Pharmaceutical Preparation Manufacturing	325412	36	11
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1	0
Industrial	Paint and Coating Manufacturing	325510	51	26
Industrial	Adhesive Manufacturing	325520	4	1
Industrial	Surface Active Agent Manufacturing	325613	2	0
Industrial	Toilet Preparation Manufacturing	325620	2	0
Industrial	Explosives Manufacturing	325920	2	0
Industrial	Custom Compounding of Purchased Resins	325991	5	2
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	4	1
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	10	3
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	5	4
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	16	10
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	12	1
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	1	1

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	7	5
Industrial	Polystyrene Foam Product Manufacturing	326140	1	1
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	19	19
Industrial	Plastics Plumbing Fixture Manufacturing	326191	2	2
Industrial	All Other Plastics Product Manufacturing	326199	148	101
Industrial	Tire Manufacturing (except Retreading)	326211	39	27
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	6	4
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	2	2
Industrial	All Other Rubber Product Manufacturing	326299	14	9
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	4	3
Industrial	Clay Building Material and Refractories Manufacturing	327120	46	2
Industrial	Clay Refractory Manufacturing^	327124	8	4
Industrial	Flat Glass Manufacturing	327211	2	2
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	17	11
Industrial	Cement Manufacturing	327310	6	4
Industrial	Lime Manufacturing	327410	43	22
Industrial	Gypsum Product Manufacturing	327420	1	1
Industrial	Abrasive Product Manufacturing	327910	4	2
Industrial	Mineral Wool Manufacturing	327993	13	6
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	2	2
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	72	45
Industrial	Iron and Steel Mills^	331111	50	5
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	1	0
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	5	2
Industrial	Rolled Steel Shape Manufacturing	331221	6	2
Industrial	Primary Aluminum Production^	331312	2	0
Industrial	Alumina Refining and Primary Aluminum Production	331313	16	1
Industrial	Secondary Smelting and Alloying of Aluminum	331314	53	22
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	6	2
Industrial	Aluminum Extruded Product Manufacturing^	331316	1	0
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	2	0
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1	0
Industrial	Primary Smelting and Refining of Copper^	331411	0	0

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	2	0
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	3	0
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1	0
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	3	1
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	2	0
Industrial	Iron Foundries	331511	83	40
Industrial	Steel Foundries (except Investment)	331513	2	0
Industrial	Aluminum Die-Casting Foundries^	331521	1	0
Industrial	Aluminum Foundries (except Die-Casting)	331524	2	0
Industrial	Nonferrous Forging	332112	1	1
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	1	1
Industrial	Hand and Edge Tool Manufacturing^	332212	1	1
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	1	1
Industrial	Fabricated Structural Metal Manufacturing	332312	1	1
Industrial	Metal Window and Door Manufacturing	332321	5	5
Industrial	Sheet Metal Work Manufacturing	332322	1	1
Industrial	Metal Can Manufacturing	332431	14	8
Industrial	Other Metal Container Manufacturing	332439	4	3
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	1	1
Industrial	Metal Heat Treating	332811	1	1
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	436	332
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	3	3
Industrial	Other Fabricated Metal Manufacturing	332990	1	1
Industrial	Small Arms Ammunition Manufacturing	332992	1	1
Industrial	Ammunition (except Small Arms) Manufacturing	332993	3	3
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	3	3
Industrial	Farm Machinery and Equipment Manufacturing	333111	8	5
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1	1
Industrial	Construction Machinery Manufacturing	333120	30	20
Industrial	Mining Machinery and Equipment Manufacturing	333131	2	2
Industrial	Printing Machinery and Equipment Manufacturing^	333293	1	1
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1	1

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1	1
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	1	1
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	1	1
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1	1
Industrial	Other Engine Equipment Manufacturing	333618	5	4
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1	1
Industrial	Welding and Soldering Equipment Manufacturing	333992	2	2
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1	1
Industrial	Electron Tube Manufacturing^	334411	1	1
Industrial	Bare Printed Circuit Board Manufacturing	334412	1	1
Industrial	Semiconductor and Related Device Manufacturing	334413	23	16
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	1	1
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	0	0
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1	1
Industrial	Household Laundry Equipment Manufacturing	335224	13	11
Industrial	Other Major Household Appliance Manufacturing	335228	2	2
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	1	1
Industrial	Motor and Generator Manufacturing	335312	2	2
Industrial	Storage Battery Manufacturing	335911	1	1
Industrial	Current-Carrying Wiring Device Manufacturing	335931	1	1
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1	1
Industrial	Carbon and Graphite Product Manufacturing	335991	6	5
Industrial	Automobile Manufacturing	336111	66	33
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	5	4
Industrial	Heavy Duty Truck Manufacturing	336120	8	6
Industrial	Motor Vehicle Body Manufacturing	336211	8	6
Industrial	Truck Trailer Manufacturing	336212	1	1
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	2	2
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	1	1
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	3	2

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	2	2
Industrial	Motor Vehicle Brake System Manufacturing	336340	1	1
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	2	2
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1	1
Industrial	Motor Vehicle Metal Stamping	336370	1	1
Industrial	Other Motor Vehicle Parts Manufacturing	336390	13	9
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	2	2
Industrial	Aircraft Manufacturing	336411	125	99
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	8	6
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	10	6
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1	1
Industrial	Railroad Rolling Stock Manufacturing	336510	1	1
Industrial	Ship Building and Repairing	336611	92	57
Industrial	Boat Building	336612	123	81
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	2	2
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	347	260
Industrial	Upholstered Household Furniture Manufacturing	337121	2	2
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	14	10
Industrial	Institutional Furniture Manufacturing	337127	1	1
Industrial	Wood Office Furniture Manufacturing	337211	5	4
Industrial	Office Furniture (except Wood) Manufacturing	337214	19	12
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	1	1
Industrial	Blind and Shade Manufacturing	337920	1	1
Industrial	Surgical and Medical Instrument Manufacturing	339112	2	2
Industrial	Surgical Appliance and Supplies Manufacturing	339113	1	1
Industrial	Jewelry and Silverware Manufacturing	339910	1	1
Industrial	Sporting and Athletic Goods Manufacturing	339920	1	1
Industrial	Office Supplies (except Paper) Manufacturing	339940	1	1
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	2	2
Industrial	Burial Casket Manufacturing	339995	3	2
Industrial	All Other Miscellaneous Manufacturing	339999	5	4
Commercial	Grain and Field Bean Merchant Wholesalers	424510	1	1
Commercial	Petroleum Bulk Stations and Terminals	424710	7	4
Commercial	Scheduled Passenger Air Transportation	481111	2	2
Commercial	Line-Haul Railroads	482111	1	1

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Energy	Pipeline Transportation of Crude Oil	486110	1	1
Energy	Pipeline Transportation of Natural Gas	486210	501	284
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1	1
Commercial	Support Activities for Rail Transportation	488210	3	2
Commercial	Marine Cargo Handling	488320	2	2
Commercial	General Warehousing and Storage	493110	180	86
Commercial	Other Warehousing and Storage	493190	6	2
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	1	1
Commercial	Testing Laboratories	541380	2	2
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology)^	541715	2	2
Commercial	All Other Support Services	561990	1	1
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	41	26
Waste Treatment	Solid Waste Landfill	562212	522	330
Waste Treatment	Solid Waste Combustors and Incinerators	562213	3	2
Waste Treatment	Remediation Services	562910	1	1
Educational Services	Colleges, Universities, and Professional Schools	611310	23	13
Commercial	Amusement and Theme Parks	713110	1	1
Commercial	Linen and Uniform Supply	812330	1	1
Commercial	Industrial Launderers	812332	3	2

Sources: 2012 Economic Census; Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources.” Memorandum for U.S. EPA/OAQPS/SPPD.

Table A-2 Sources Expected to Experience Regulatory Relief under Alternative Scenario 1

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	1	0
Energy	Crude Petroleum and Natural Gas Extraction	211111	120	52
Energy	Natural Gas Liquid Extraction	211112	26	11
Industrial	Iron Ore Mining	212210	9	1
Industrial	Lead Ore and Zinc Ore Mining	212231	1	0
Industrial	Copper Ore and Nickel Ore Mining	212234	1	0
Industrial	All Other Metal Ore Mining	212299	1	0
Industrial	Industrial Sand Mining	212322	3	1
Industrial	Kaolin and Ball Clay Mining	212324	3	1
Industrial	Potash, Soda, and Borate Mineral Mining	212391	6	2
Industrial	All Other Nonmetallic Mineral Mining	212399	1	0
Energy	Support Activities for Oil and Gas Operations	213112	3	1
Utilities	Hydroelectric Power Generation	221111	1	0
Utilities	Fossil Fuel Electric Power Generation	221112	334	60
Utilities	Biomass Electric Power Generation	221117	5	2
Utilities	Other Electric Power Generation	221118	1	0
Utilities	Other Electric Power Generation^	221119	8	3
Utilities	Electric Power Distribution	221122	1	0
Utilities	Natural Gas Distribution	221210	13	5
Utilities	Water Supply and Irrigation Systems	221310	2	0
Utilities	Sewage Treatment Facilities	221320	19	8
Utilities	Steam and Air-Conditioning Supply	221330	22	9
Industrial	Other Animal Food Manufacturing	311119	1	0
Industrial	Wet Corn Milling	311221	16	0
Industrial	Soybean Processing^	311222	16	0
Industrial	Other Oilseed Processing^	311223	5	0
Industrial	Soybean and Other Oilseed Processing	311224	116	2
Industrial	Fats and Oils Refining and Blending	311225	2	0
Industrial	Beet Sugar Manufacturing	311313	11	0
Industrial	Cane Sugar Manufacturing	311314	3	0
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	2	0
Industrial	Fruit and Vegetable Canning	311421	1	0
Industrial	Specialty Canning	311422	2	0
Industrial	Cheese Manufacturing	311513	2	0
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	3	0
Industrial	Rendering and Meat Byproduct Processing	311613	1	0
Industrial	Commercial Bakeries	311812	2	0
Industrial	Other Snack Food Manufacturing	311919	1	0
Industrial	Coffee and Tea Manufacturing	311920	1	0

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1	0
Industrial	Spice and Extract Manufacturing	311942	4	0
Industrial	All Other Miscellaneous Food Manufacturing	311999	6	0
Industrial	Breweries	312120	3	1
Industrial	Distilleries	312140	1	0
Industrial	Tobacco Manufacturing	312230	1	0
Industrial	Yarn Spinning Mills^	313111	1	0
Industrial	Thread Mills^	313113	1	0
Industrial	Broadwoven Fabric Mills	313210	2	0
Industrial	Narrow Fabric Mills^	313221	1	0
Industrial	Textile and Fabric Finishing Mills	313310	1	0
Industrial	Broadwoven Fabric Finishing Mills^	313311	3	1
Industrial	Fabric Coating Mills	313320	50	20
Industrial	Tire Cord and Tire Fabric Mills^	314992	1	0
Industrial	Leather and Hide Tanning and Finishing	316110	6	5
Industrial	Sawmills	321113	61	34
Industrial	Wood Preservation	321114	3	2
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	3	2
Industrial	Softwood Veneer and Plywood Manufacturing	321212	29	17
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	6	4
Industrial	Reconstituted Wood Product Manufacturing	321219	284	161
Industrial	Wood Window and Door Manufacturing	321911	4	2
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	4	2
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	3	2
Industrial	Pulp Mills	322110	18	0
Industrial	Paper (except Newsprint) Mills	322121	281	0
Industrial	Newsprint Mills	322122	7	0
Industrial	Paperboard Mills	322130	36	0
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	213	99
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	17	0
Industrial	Coated and Laminated Paper Manufacturing^	322222	12	0
Industrial	Sanitary Paper Product Manufacturing	322291	2	0
Industrial	All Other Converted Paper Product Manufacturing	322299	1	0
Industrial	Commercial Lithographic Printing^	323110	1	1
Industrial	Commercial Printing (except Screen and Books)	323111	188	95
Industrial	Books Printing	323117	3	2
Industrial	Petroleum Refineries	324110	424	124
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	3	0
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	4	0
Industrial	Petrochemical Manufacturing	325110	597	215

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Industrial Gas Manufacturing	325120	4	1
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1	0
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	3	1
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	2	0
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	10	2
Industrial	Alkalies and Chlorine Manufacturing^	325181	4	1
Industrial	Carbon Black Manufacturing^	325182	21	8
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	93	31
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	1	0
Industrial	Ethyl Alcohol Manufacturing	325193	7	2
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	2	0
Industrial	All Other Basic Organic Chemical Manufacturing	325199	77	20
Industrial	Plastics Material and Resin Manufacturing	325211	833	231
Industrial	Synthetic Rubber Manufacturing	325212	24	3
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	6	2
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1	0
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	8	2
Industrial	Nitrogenous Fertilizer Manufacturing	325311	16	4
Industrial	Phosphatic Fertilizer Manufacturing	325312	30	2
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	22	2
Industrial	Medicinal and Botanical Manufacturing	325411	4	1
Industrial	Pharmaceutical Preparation Manufacturing	325412	36	7
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1	0
Industrial	Paint and Coating Manufacturing	325510	51	23
Industrial	Adhesive Manufacturing	325520	4	1
Industrial	Surface Active Agent Manufacturing	325613	2	0
Industrial	Toilet Preparation Manufacturing	325620	2	0
Industrial	Explosives Manufacturing	325920	2	0
Industrial	Custom Compounding of Purchased Resins	325991	5	2
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	4	1
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	10	2
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	5	2
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	16	7
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	12	0
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	1	0

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	7	3
Industrial	Polystyrene Foam Product Manufacturing	326140	1	0
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	19	17
Industrial	Plastics Plumbing Fixture Manufacturing	326191	2	0
Industrial	All Other Plastics Product Manufacturing	326199	148	68
Industrial	Tire Manufacturing (except Retreading)	326211	39	18
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	6	2
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	2	0
Industrial	All Other Rubber Product Manufacturing	326299	14	5
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	4	1
Industrial	Clay Building Material and Refractories Manufacturing	327120	46	0
Industrial	Clay Refractory Manufacturing^	327124	8	3
Industrial	Flat Glass Manufacturing	327211	2	0
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	17	7
Industrial	Cement Manufacturing	327310	6	2
Industrial	Lime Manufacturing	327410	43	18
Industrial	Gypsum Product Manufacturing	327420	1	0
Industrial	Abrasive Product Manufacturing	327910	4	1
Industrial	Mineral Wool Manufacturing	327993	13	4
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	2	0
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	72	43
Industrial	Iron and Steel Mills^	331111	50	5
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	1	0
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	5	2
Industrial	Rolled Steel Shape Manufacturing	331221	6	2
Industrial	Primary Aluminum Production^	331312	2	0
Industrial	Alumina Refining and Primary Aluminum Production	331313	16	1
Industrial	Secondary Smelting and Alloying of Aluminum	331314	53	20
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	6	2
Industrial	Aluminum Extruded Product Manufacturing^	331316	1	0
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	2	0

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1	0
Industrial	Primary Smelting and Refining of Copper^	331411	0	0
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	2	0
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	3	0
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1	0
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	3	1
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	2	0
Industrial	Iron Foundries	331511	83	38
Industrial	Steel Foundries (except Investment)	331513	2	0
Industrial	Aluminum Die-Casting Foundries^	331521	1	0
Industrial	Aluminum Foundries (except Die-Casting)	331524	2	0
Industrial	Nonferrous Forging	332112	1	1
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	1	1
Industrial	Hand and Edge Tool Manufacturing^	332212	1	1
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	1	1
Industrial	Fabricated Structural Metal Manufacturing	332312	1	1
Industrial	Metal Window and Door Manufacturing	332321	5	4
Industrial	Sheet Metal Work Manufacturing	332322	1	1
Industrial	Metal Can Manufacturing	332431	14	7
Industrial	Other Metal Container Manufacturing	332439	4	2
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	1	1
Industrial	Metal Heat Treating	332811	1	1
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	436	251
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	3	2
Industrial	Other Fabricated Metal Manufacturing	332990	1	1
Industrial	Small Arms Ammunition Manufacturing	332992	1	1
Industrial	Ammunition (except Small Arms) Manufacturing	332993	3	2
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	3	2
Industrial	Farm Machinery and Equipment Manufacturing	333111	8	3
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1	0
Industrial	Construction Machinery Manufacturing	333120	30	15
Industrial	Mining Machinery and Equipment Manufacturing	333131	2	0

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Printing Machinery and Equipment Manufacturing^	333293	1	0
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1	0
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1	0
Industrial	Machine Tool (Metal Cutting Types) Manufacturing^	333512	1	0
Industrial	Machine Tool (Metal Forming Types) Manufacturing^	333513	1	0
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1	0
Industrial	Other Engine Equipment Manufacturing	333618	5	2
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1	0
Industrial	Welding and Soldering Equipment Manufacturing	333992	2	0
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1	0
Industrial	Electron Tube Manufacturing^	334411	1	0
Industrial	Bare Printed Circuit Board Manufacturing	334412	1	0
Industrial	Semiconductor and Related Device Manufacturing	334413	23	13
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	1	0
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	0	0
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1	1
Industrial	Household Laundry Equipment Manufacturing	335224	13	11
Industrial	Other Major Household Appliance Manufacturing	335228	2	2
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	1	1
Industrial	Motor and Generator Manufacturing	335312	2	2
Industrial	Storage Battery Manufacturing	335911	1	1
Industrial	Current-Carrying Wiring Device Manufacturing	335931	1	1
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1	1
Industrial	Carbon and Graphite Product Manufacturing	335991	6	5
Industrial	Automobile Manufacturing	336111	66	18
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	5	4
Industrial	Heavy Duty Truck Manufacturing	336120	8	5
Industrial	Motor Vehicle Body Manufacturing	336211	8	5
Industrial	Truck Trailer Manufacturing	336212	1	1
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	2	2

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	1	1
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	3	2
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	2	2
Industrial	Motor Vehicle Brake System Manufacturing	336340	1	1
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	2	2
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1	1
Industrial	Motor Vehicle Metal Stamping	336370	1	1
Industrial	Other Motor Vehicle Parts Manufacturing	336390	13	7
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	2	2
Industrial	Aircraft Manufacturing	336411	125	84
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	8	5
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	10	6
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1	1
Industrial	Railroad Rolling Stock Manufacturing	336510	1	1
Industrial	Ship Building and Repairing	336611	92	48
Industrial	Boat Building	336612	123	64
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	2	2
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	347	238
Industrial	Upholstered Household Furniture Manufacturing	337121	2	2
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	14	9
Industrial	Institutional Furniture Manufacturing	337127	1	1
Industrial	Wood Office Furniture Manufacturing	337211	5	4
Industrial	Office Furniture (except Wood) Manufacturing	337214	19	8
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	1	1
Industrial	Blind and Shade Manufacturing	337920	1	1
Industrial	Surgical and Medical Instrument Manufacturing	339112	2	0
Industrial	Surgical Appliance and Supplies Manufacturing	339113	1	0
Industrial	Jewelry and Silverware Manufacturing	339910	1	0
Industrial	Sporting and Athletic Goods Manufacturing	339920	1	0
Industrial	Office Supplies (except Paper) Manufacturing	339940	1	0
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	2	0
Industrial	Burial Casket Manufacturing	339995	3	1
Industrial	All Other Miscellaneous Manufacturing	339999	5	2
Commercial	Grain and Field Bean Merchant Wholesalers	424510	1	0

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Commercial	Petroleum Bulk Stations and Terminals	424710	7	3
Commercial	Scheduled Passenger Air Transportation	481111	2	0
Commercial	Line-Haul Railroads	482111	1	0
Energy	Pipeline Transportation of Crude Oil	486110	1	0
Energy	Pipeline Transportation of Natural Gas	486210	501	229
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1	0
Commercial	Support Activities for Rail Transportation	488210	3	1
Commercial	Marine Cargo Handling	488320	2	0
Commercial	General Warehousing and Storage	493110	180	75
Commercial	Other Warehousing and Storage	493190	6	2
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	1	0
Commercial	Testing Laboratories	541380	2	0
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology) ^{^^}	541715	2	0
Commercial	All Other Support Services	561990	1	0
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	41	21
Waste Treatment	Solid Waste Landfill	562212	522	262
Waste Treatment	Solid Waste Combustors and Incinerators	562213	3	2
Waste Treatment	Remediation Services	562910	1	1
Educational Services	Colleges, Universities, and Professional Schools	611310	23	9
Commercial	Amusement and Theme Parks	713110	1	0
Commercial	Linen and Uniform Supply	812330	1	0
Commercial	Industrial Launderers	812332	3	1

Sources: 2012 Economic Census; Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources.” Memorandum for U.S. EPA/OAQPS/SPPD.

Table A-3 Sources Expected to Experience Regulatory Relief under Alternative Scenario 2

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Agriculture	Postharvest Crop Activities (except Cotton Ginning)	115114	1	1
Energy	Crude Petroleum and Natural Gas Extraction	211111	120	72
Energy	Natural Gas Liquid Extraction	211112	26	17
Industrial	Iron Ore Mining	212210	9	2
Industrial	Lead Ore and Zinc Ore Mining	212231	1	1
Industrial	Copper Ore and Nickel Ore Mining	212234	1	1
Industrial	All Other Metal Ore Mining	212299	1	1
Industrial	Industrial Sand Mining	212322	3	2
Industrial	Kaolin and Ball Clay Mining	212324	3	2
Industrial	Potash, Soda, and Borate Mineral Mining	212391	6	4
Industrial	All Other Nonmetallic Mineral Mining	212399	1	1
Energy	Support Activities for Oil and Gas Operations	213112	3	2
Utilities	Hydroelectric Power Generation	221111	1	1
Utilities	Fossil Fuel Electric Power Generation	221112	334	82
Utilities	Biomass Electric Power Generation	221117	5	4
Utilities	Other Electric Power Generation	221118	1	1
Utilities	Other Electric Power Generation^	221119	8	5
Utilities	Electric Power Distribution	221122	1	1
Utilities	Natural Gas Distribution	221210	13	7
Utilities	Water Supply and Irrigation Systems	221310	2	2
Utilities	Sewage Treatment Facilities	221320	19	11
Utilities	Steam and Air-Conditioning Supply	221330	22	13
Industrial	Other Animal Food Manufacturing	311119	1	0
Industrial	Wet Corn Milling	311221	16	0
Industrial	Soybean Processing^	311222	16	0
Industrial	Other Oilseed Processing^	311223	5	0
Industrial	Soybean and Other Oilseed Processing	311224	116	2
Industrial	Fats and Oils Refining and Blending	311225	2	0
Industrial	Beet Sugar Manufacturing	311313	11	0
Industrial	Cane Sugar Manufacturing	311314	3	0
Industrial	Frozen Fruit, Juice, and Vegetable Manufacturing	311411	2	0
Industrial	Fruit and Vegetable Canning	311421	1	0
Industrial	Specialty Canning	311422	2	0
Industrial	Cheese Manufacturing	311513	2	0
Industrial	Dry, Condensed, and Evaporated Dairy Product Manufacturing	311514	3	0
Industrial	Rendering and Meat Byproduct Processing	311613	1	0
Industrial	Commercial Bakeries	311812	2	0
Industrial	Other Snack Food Manufacturing	311919	1	0
Industrial	Coffee and Tea Manufacturing	311920	1	0

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Flavoring Syrup and Concentrate Manufacturing	311930	1	0
Industrial	Spice and Extract Manufacturing	311942	4	0
Industrial	All Other Miscellaneous Food Manufacturing	311999	6	0
Industrial	Breweries	312120	3	2
Industrial	Distilleries	312140	1	1
Industrial	Tobacco Manufacturing	312230	1	1
Industrial	Yarn Spinning Mills^	313111	1	1
Industrial	Thread Mills^	313113	1	1
Industrial	Broadwoven Fabric Mills	313210	2	2
Industrial	Narrow Fabric Mills^	313221	1	1
Industrial	Textile and Fabric Finishing Mills	313310	1	1
Industrial	Broadwoven Fabric Finishing Mills^	313311	3	2
Industrial	Fabric Coating Mills	313320	50	34
Industrial	Tire Cord and Tire Fabric Mills^	314992	1	1
Industrial	Leather and Hide Tanning and Finishing	316110	6	5
Industrial	Sawmills	321113	61	45
Industrial	Wood Preservation	321114	3	2
Industrial	Hardwood Veneer and Plywood Manufacturing	321211	3	2
Industrial	Softwood Veneer and Plywood Manufacturing	321212	29	21
Industrial	Engineered Wood Member (except Truss) Manufacturing	321213	6	4
Industrial	Reconstituted Wood Product Manufacturing	321219	284	211
Industrial	Wood Window and Door Manufacturing	321911	4	2
Industrial	Cut Stock, Resawing Lumber, and Planing	321912	4	2
Industrial	All Other Miscellaneous Wood Product Manufacturing	321999	3	2
Industrial	Pulp Mills	322110	18	0
Industrial	Paper (except Newsprint) Mills	322121	281	1
Industrial	Newsprint Mills	322122	7	0
Industrial	Paperboard Mills	322130	36	0
Industrial	Corrugated and Solid Fiber Box Manufacturing	322211	213	157
Industrial	Paper Bag and Coated and Treated Paper Manufacturing	322220	17	0
Industrial	Coated and Laminated Paper Manufacturing^	322222	12	0
Industrial	Sanitary Paper Product Manufacturing	322291	2	0
Industrial	All Other Converted Paper Product Manufacturing	322299	1	0
Industrial	Commercial Lithographic Printing^	323110	1	1
Industrial	Commercial Printing (except Screen and Books)	323111	188	124
Industrial	Books Printing	323117	3	2
Industrial	Petroleum Refineries	324110	424	185
Industrial	Asphalt Shingle and Coating Materials Manufacturing	324122	3	1
Industrial	All Other Petroleum and Coal Products Manufacturing	324199	4	1
Industrial	Petrochemical Manufacturing	325110	597	283

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Industrial Gas Manufacturing	325120	4	1
Industrial	Synthetic Dye and Pigment Manufacturing	325130	1	0
Industrial	Inorganic Dye and Pigment Manufacturing^	325131	3	1
Industrial	Synthetic Organic Dye and Pigment Manufacturing^	325132	2	0
Industrial	Other Basic Inorganic Chemical Manufacturing	325180	10	3
Industrial	Alkalies and Chlorine Manufacturing^	325181	4	1
Industrial	Carbon Black Manufacturing^	325182	21	9
Industrial	All Other Basic Inorganic Chemical Manufacturing^	325188	93	42
Industrial	Cyclic Crude and Intermediate Manufacturing^	325192	1	0
Industrial	Ethyl Alcohol Manufacturing	325193	7	3
Industrial	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	2	0
Industrial	All Other Basic Organic Chemical Manufacturing	325199	77	32
Industrial	Plastics Material and Resin Manufacturing	325211	833	412
Industrial	Synthetic Rubber Manufacturing	325212	24	4
Industrial	Artificial and Synthetic Fibers and Filaments Manufacturing	325220	6	2
Industrial	Cellulosic Organic Fiber Manufacturing^	325221	1	0
Industrial	Noncellulosic Organic Fiber Manufacturing^	325222	8	3
Industrial	Nitrogenous Fertilizer Manufacturing	325311	16	7
Industrial	Phosphatic Fertilizer Manufacturing	325312	30	3
Industrial	Pesticide and Other Agricultural Chemical Manufacturing	325320	22	6
Industrial	Medicinal and Botanical Manufacturing	325411	4	1
Industrial	Pharmaceutical Preparation Manufacturing	325412	36	15
Industrial	Biological Product (except Diagnostic) Manufacturing	325414	1	0
Industrial	Paint and Coating Manufacturing	325510	51	34
Industrial	Adhesive Manufacturing	325520	4	1
Industrial	Surface Active Agent Manufacturing	325613	2	0
Industrial	Toilet Preparation Manufacturing	325620	2	0
Industrial	Explosives Manufacturing	325920	2	0
Industrial	Custom Compounding of Purchased Resins	325991	5	2
Industrial	Photographic Film, Paper, Plate, and Chemical Manufacturing	325992	4	1
Industrial	All Other Miscellaneous Chemical Product and Preparation Manufacturing	325998	10	3
Industrial	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	326112	5	4
Industrial	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	326113	16	10
Industrial	Unlaminated Plastics Profile Shape Manufacturing	326121	12	1
Industrial	Plastics Pipe and Pipe Fitting Manufacturing	326122	1	1

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	326130	7	5
Industrial	Polystyrene Foam Product Manufacturing	326140	1	1
Industrial	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	19	19
Industrial	Plastics Plumbing Fixture Manufacturing	326191	2	2
Industrial	All Other Plastics Product Manufacturing	326199	148	101
Industrial	Tire Manufacturing (except Retreading)	326211	39	27
Industrial	Rubber and Plastics Hoses and Belting Manufacturing	326220	6	4
Industrial	Rubber Product Manufacturing for Mechanical Use	326291	2	2
Industrial	All Other Rubber Product Manufacturing	326299	14	8
Industrial	Pottery, Ceramics, and Plumbing Fixture Manufacturing	327110	4	3
Industrial	Clay Building Material and Refractories Manufacturing	327120	46	2
Industrial	Clay Refractory Manufacturing^	327124	8	4
Industrial	Flat Glass Manufacturing	327211	2	2
Industrial	Other Pressed and Blown Glass and Glassware Manufacturing	327212	17	11
Industrial	Cement Manufacturing	327310	6	4
Industrial	Lime Manufacturing	327410	43	22
Industrial	Gypsum Product Manufacturing	327420	1	1
Industrial	Abrasive Product Manufacturing	327910	4	2
Industrial	Mineral Wool Manufacturing	327993	13	6
Industrial	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	327999	2	2
Industrial	Iron and Steel Mills and Ferroalloy Manufacturing	331110	72	50
Industrial	Iron and Steel Mills^	331111	50	6
Industrial	Electrometallurgical Ferroalloy Product Manufacturing^	331112	1	1
Industrial	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210	5	4
Industrial	Rolled Steel Shape Manufacturing	331221	6	4
Industrial	Primary Aluminum Production^	331312	2	2
Industrial	Alumina Refining and Primary Aluminum Production	331313	16	2
Industrial	Secondary Smelting and Alloying of Aluminum	331314	53	27
Industrial	Aluminum Sheet, Plate, and Foil Manufacturing	331315	6	4
Industrial	Aluminum Extruded Product Manufacturing^	331316	1	1
Industrial	Other Aluminum Rolling, Drawing, and Extruding	331318	2	2

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Nonferrous Metal (except Aluminum) Smelting and Refining	331410	1	1
Industrial	Primary Smelting and Refining of Copper^	331411	0	0
Industrial	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)^	331419	2	1
Industrial	Copper Rolling, Drawing, Extruding, and Alloying	331420	3	2
Industrial	Copper Wire (except Mechanical) Drawing^	331422	1	1
Industrial	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	331491	3	2
Industrial	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	331492	2	2
Industrial	Iron Foundries	331511	83	46
Industrial	Steel Foundries (except Investment)	331513	2	2
Industrial	Aluminum Die-Casting Foundries^	331521	1	1
Industrial	Aluminum Foundries (except Die-Casting)	331524	2	2
Industrial	Nonferrous Forging	332112	1	1
Industrial	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	332119	1	1
Industrial	Hand and Edge Tool Manufacturing^	332212	1	1
Industrial	Prefabricated Metal Building and Component Manufacturing	332311	1	1
Industrial	Fabricated Structural Metal Manufacturing	332312	1	1
Industrial	Metal Window and Door Manufacturing	332321	5	6
Industrial	Sheet Metal Work Manufacturing	332322	1	1
Industrial	Metal Can Manufacturing	332431	14	11
Industrial	Other Metal Container Manufacturing	332439	4	3
Industrial	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	332722	1	1
Industrial	Metal Heat Treating	332811	1	1
Industrial	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	436	371
Industrial	Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	3	3
Industrial	Other Fabricated Metal Manufacturing	332990	1	1
Industrial	Small Arms Ammunition Manufacturing	332992	1	1
Industrial	Ammunition (except Small Arms) Manufacturing	332993	3	3
Industrial	All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	3	3
Industrial	Farm Machinery and Equipment Manufacturing	333111	8	5
Industrial	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	333112	1	1
Industrial	Construction Machinery Manufacturing	333120	30	23
Industrial	Mining Machinery and Equipment Manufacturing	333131	2	2

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Printing Machinery and Equipment Manufacturing [^]	333293	1	1
Industrial	Photographic and Photocopying Equipment Manufacturing	333316	1	1
Industrial	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	333415	1	1
Industrial	Machine Tool (Metal Cutting Types) Manufacturing [^]	333512	1	1
Industrial	Machine Tool (Metal Forming Types) Manufacturing [^]	333513	1	1
Industrial	Turbine and Turbine Generator Set Units Manufacturing	333611	1	1
Industrial	Other Engine Equipment Manufacturing	333618	5	4
Industrial	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923	1	1
Industrial	Welding and Soldering Equipment Manufacturing	333992	2	2
Industrial	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1	1
Industrial	Electron Tube Manufacturing [^]	334411	1	1
Industrial	Bare Printed Circuit Board Manufacturing	334412	1	1
Industrial	Semiconductor and Related Device Manufacturing	334413	23	18
Industrial	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	334512	1	1
Industrial	Blank Magnetic and Optical Recording Media Manufacturing	334613	0	0
Industrial	Electric Lamp Bulb and Part Manufacturing	335110	1	1
Industrial	Household Laundry Equipment Manufacturing	335224	13	11
Industrial	Other Major Household Appliance Manufacturing	335228	2	2
Industrial	Power, Distribution, and Specialty Transformer Manufacturing	335311	1	1
Industrial	Motor and Generator Manufacturing	335312	2	2
Industrial	Storage Battery Manufacturing	335911	1	1
Industrial	Current-Carrying Wiring Device Manufacturing	335931	1	1
Industrial	Noncurrent-Carrying Wiring Device Manufacturing	335932	1	1
Industrial	Carbon and Graphite Product Manufacturing	335991	6	5
Industrial	Automobile Manufacturing	336111	66	37
Industrial	Light Truck and Utility Vehicle Manufacturing	336112	5	5
Industrial	Heavy Duty Truck Manufacturing	336120	8	6
Industrial	Motor Vehicle Body Manufacturing	336211	8	6
Industrial	Truck Trailer Manufacturing	336212	1	1
Industrial	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	2	2

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Industrial	Carburetor, Piston, Piston Ring, and Valve Manufacturing^	336311	1	1
Industrial	Gasoline Engine and Engine Parts Manufacturing^	336312	3	3
Industrial	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	2	2
Industrial	Motor Vehicle Brake System Manufacturing	336340	1	1
Industrial	Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	2	2
Industrial	Motor Vehicle Seating and Interior Trim Manufacturing	336360	1	1
Industrial	Motor Vehicle Metal Stamping	336370	1	1
Industrial	Other Motor Vehicle Parts Manufacturing	336390	13	9
Industrial	All Other Motor Vehicle Parts Manufacturing^	336399	2	2
Industrial	Aircraft Manufacturing	336411	125	107
Industrial	Aircraft Engine and Engine Parts Manufacturing	336412	8	6
Industrial	Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413	10	7
Industrial	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	336415	1	1
Industrial	Railroad Rolling Stock Manufacturing	336510	1	1
Industrial	Ship Building and Repairing	336611	92	74
Industrial	Boat Building	336612	123	94
Industrial	Military Armored Vehicle, Tank, and Tank Component Manufacturing	336992	2	2
Industrial	Wood Kitchen Cabinet and Countertop Manufacturing	337110	347	289
Industrial	Upholstered Household Furniture Manufacturing	337121	2	2
Industrial	Nonupholstered Wood Household Furniture Manufacturing	337122	14	12
Industrial	Institutional Furniture Manufacturing	337127	1	1
Industrial	Wood Office Furniture Manufacturing	337211	5	6
Industrial	Office Furniture (except Wood) Manufacturing	337214	19	17
Industrial	Showcase, Partition, Shelving, and Locker Manufacturing	337215	1	1
Industrial	Blind and Shade Manufacturing	337920	1	1
Industrial	Surgical and Medical Instrument Manufacturing	339112	2	2
Industrial	Surgical Appliance and Supplies Manufacturing	339113	1	1
Industrial	Jewelry and Silverware Manufacturing	339910	1	1
Industrial	Sporting and Athletic Goods Manufacturing	339920	1	1
Industrial	Office Supplies (except Paper) Manufacturing	339940	1	1
Industrial	Gasket, Packing, and Sealing Device Manufacturing	339991	2	2
Industrial	Burial Casket Manufacturing	339995	3	2
Industrial	All Other Miscellaneous Manufacturing	339999	5	4
Commercial	Grain and Field Bean Merchant Wholesalers	424510	1	1

Sector	Source Category	NAICS	Facilities	
			Category Subject to MACT	Projected to Obtain Area Source Status
Commercial	Petroleum Bulk Stations and Terminals	424710	7	4
Commercial	Scheduled Passenger Air Transportation	481111	2	2
Commercial	Line-Haul Railroads	482111	1	1
Energy	Pipeline Transportation of Crude Oil	486110	1	1
Energy	Pipeline Transportation of Natural Gas	486210	501	326
Energy	Pipeline Transportation of Refined Petroleum Products	486910	1	1
Commercial	Support Activities for Rail Transportation	488210	3	2
Commercial	Marine Cargo Handling	488320	2	2
Commercial	General Warehousing and Storage	493110	180	108
Commercial	Other Warehousing and Storage	493190	6	4
Commercial	Lessors of Nonresidential Buildings (except Miniwarehouses)	531120	1	1
Commercial	Testing Laboratories	541380	2	2
Commercial	Research and Development in the Physical, Engineering and Life Sciences (except Nanotechnology and Biotechnology) ^{^^}	541715	2	2
Commercial	All Other Support Services	561990	1	1
Waste Treatment	Hazardous Waste Treatment and Disposal	562211	41	32
Waste Treatment	Solid Waste Landfill	562212	522	399
Waste Treatment	Solid Waste Combustors and Incinerators	562213	3	3
Waste Treatment	Remediation Services	562910	1	1
Educational Services	Colleges, Universities, and Professional Schools	611310	23	15
Commercial	Amusement and Theme Parks	713110	1	1
Commercial	Linen and Uniform Supply	812330	1	1
Commercial	Industrial Launderers	812332	3	2

Sources: 2012 Economic Census; Eastern Research Group. May, 2019. Analysis of Potential Costs and Cost Savings Associated with Facilities Reclassifying as Area Sources.” Memorandum for U.S. EPA/OAQPS/SPPD.

ATTACHMENT B

SUMMARY OF METHODOLOGY AND DATA USED TO ESTIMATE CHANGES IN EMISSIONS

As described in the Emission Impact Analysis Technical Support Memorandum, the EPA and ERG reviewed the reclassification of 34 sources that as of May 2019 had reclassified to area source status or were in the process of reclassifying to area source status since January 2018. The EPA also performed an illustrative emission impact analysis for six source categories. The illustrative analysis focuses on the technology basis for the major source NESHAP and effects of the MM2A policy on the facilities in each source category, including the effect of other federal and state rules (*e.g.*, NSPS or state rules to limit VOC emissions in ozone nonattainment areas). The details of the review of the reclassification actions and the illustrative analysis of the six source categories, including the methodology and the rationale for EPA's key assumptions and assessments, can be found in the Emission Impact Analysis Technical Support Memorandum, available in the docket.³⁴ Below we summarize the analysis of reclassifications and the illustrative analysis of the six source categories. This analysis of the six source categories is purely illustrative in nature and does not serve as an analysis of emissions impacts for all source categories affected by the proposal.

Reclassifications Analysis

The EPA reviewed reclassification permits associated with 34 reclassifications to area source status. Of the 34 sources reviewed for this analysis, 21 sources can be classified as coating type sources; five as oil and gas sources; four as fuel combustion/boiler sources, three as chemical sources and one as heavy industry. (*See* Table 2 of Emission Impacts Analysis TSM available in the docket). To assess the potential for emission impacts due to reclassification, the EPA focused the review on the enforceable conditions associated with the HAP PTE limitations for the emission units previously subject to major source NESHAP requirements and whether the sources that reclassified will continue to use the major source NESHAP compliance obligations for these emission units as an enforceable condition on the source's PTE. A summary of the permit review and emission evaluation is presented in Table 2 and Appendix 1 of the Emission Impacts Analysis TSM available in the docket. The EPA's findings from the permit review and

³⁴ U.S. EPA. Documentation of the emission impacts analysis for the proposed rulemaking: "Reclassification of Major Sources as Area Sources under Section 112 of the Clean Air Act." May 2019.

emission evaluation is that sources that reclassify to area source status would, in most cases, achieve and maintain area source status by operating the emission controls or continuing to implement the practices they used to comply with the major source NESHAP requirements. Below is an overview of the EPA's findings from the permit review and evaluation:

- Of the 21 coating sources (Facilities # 1-21 on Table 2 of Emission Impact Analysis TSM), 20 used compliant materials (low-HAP/no-HAP) to meet applicable major source requirements, and their continued use of compliant materials is an enforceable condition after reclassification. Only one source (Facility # 13) used a regenerative thermal oxidizer (RTO) to meet the applicable major source requirements and their continued use of the RTO is an enforceable condition after reclassification. Thus, the EPA does not expect emissions increases from those sources using compliant materials (low-HAP/no-HAP) both before and after reclassification. Similarly, for the coating source using the RTO, the permit for this source continues to require the use of an RTO ensuring a HAP destruction efficiency of 95 percent as an enforceable permit requirement. Therefore, we don't expect emissions increases resulting from the reclassification of this facility.
- All five oil and gas sources (Facilities # 22-26 on Table 2 of Emission Impact Analysis TSM), that reclassified or are in the process of reclassifying relied on the use of control technologies to meet applicable major source requirements before reclassification, and their continued use of these control technologies is an enforceable condition after reclassification. Four of these facilities (#22, #24, #25, and #26) were subject to the major source requirements of the Oil and Natural Gas Production NESHAP while one facility (#23) was subject to the major source requirements of the Stationary Reciprocating Internal Combustion Engines (RICE) NESHAP.
 - The facility (#23) previously subject to the major source RICE NESHAP requirements, replaced old engines with new engines equipped with a catalytic oxidizer designed to reduce HAP emissions (formaldehyde by 90 percent) prior to the reclassification. Since reclassification, this facility continues to be subject to enforceable conditions on the operation of the engines and the catalytic oxidizer to reduce formaldehyde by 90 percent. Thus, we don't expect emissions increases resulting from the reclassification of this facility.

- Of the four facilities that were subject to the major source requirements of the Oil and Natural Gas Production NESHAP, two (#22 and #26) relied on the use of flares and enclosed combustion devices to meet applicable major source requirements before reclassification, and their continued use of these control technologies is required as an enforceable condition after reclassification. The permit for another facility (#24), as proposed, will impose enforceable emission restrictions for an existing installed and operating emissions unit and associated voluntarily installed and operated control device. The proposed enforceable conditions include the operation of an enclosed combustor to control the VOC and HAP emissions from a triethylene glycol dehydrator still vent. If these enforceable conditions are finalized, we don't expect emissions increases resulting from the reclassification of this facility. The last facility in this category (#25) took additional enforceable limits on the amount of low-pressure relief gas vented to the atmosphere to ensure emissions of the individual HAP 2,2,4-trimethylpentane (largest individual HAP for the gas compression/venting operation) emissions are below 10 tpy. This enforceable limitation ensures HAP emissions will not increase as a result of the modification to vent the low-pressure gas directly to the atmosphere instead of being recovered in a vapor recovery unit. Without the enforceable limitations in the amount of low-pressure relief gas vented to the atmosphere, emissions from the gas compression/venting would have increased (uncontrolled PTE) to 10.3 tpy for the largest individual HAP. The actions taken by this facility to reclassify to area source status resulted in emission reductions.
- Of the four fuel combustion/boiler sources (Facilities # 27-30 on Table 2 of Emission Analysis TSM), three of these sources (#27, #28, #29) had emissions above the major source thresholds as reported in the 2014 National Emission Inventory (NEI). To reclassify, these sources either ceased combustion of coal, ceased operation of boilers, or obtained enforceable restrictions on the combustion of natural gas. For each of these three sources, their actions to reclassify resulted in a reduction of HAP emissions. Another source (#30) relied on material limits and operational restrictions on natural gas usage to meet the applicable major source requirements, and the continued use of these

compliance methods is required by an enforceable condition after the reclassification. Thus, the EPA does not expect emission increases from the reclassification of this source.

- Two of the chemical sources are gasoline distribution facilities (Facilities # 31 and #33 on Table 2 of Emission Analysis TSM). These facilities were subject to 40 CFR part 63, subpart R and relied on vapor flare/vapor combustion to meet the major source requirements before reclassification, and their continued use of this control technology is required as an enforceable condition after reclassification. Since reclassification, their permit continues to require the operation of the vapor flare/vapor combustor at all times when the facility's loading racks are loading gasoline into transports. These sources are now subject to the area source NESHAP requirements in 40 CFR part 63, subpart BBBBBB that regulate emissions from tanks, transfer racks, roof landings, and maintenance. For these facilities, the EPA reviewed the operating parameters associated with the vapor flare/vapor combustion. The permit for one facility (#31) includes a requirement for annual periodic testing in addition to the continuous monitoring of the presence of the pilot flame to ensure that the enclosed combustor is operational when loading operations occur. The annual performance test together with the monitoring of the presence of the flame ensure operation and performance. We, therefore, do not expect emission increases due to the reclassification of this source. The other gasoline distribution facility (#33) continues to be subject to flare operating and monitoring requirements in 40 CFR part 60, subpart XX (New Source Performance Standards for Bulk Gasoline Terminals). The flare operating and monitoring requirements in 40 CFR part 60, subpart XX are identical to those that the source was previously subject to under 40 CFR part 63, subpart R. This permit also requires testing for specific HAP associated with the vapor combustor to ensure operation and performance. We do not expect emission increases due to the reclassification of this source.
- As for the incinerator (Facility #32 on Table 2 of Emission Analysis TSM), the source continues to be subject to the same NESHAP requirements in 40 CFR part 63 subpart, EEEE as before reclassification, and it has been reclassified for purposes of applicability with 40 CFR part 63, subpart DD (Off-Site Waste Recovery Operations), which covers emissions from tanks and equipment leaks. This source relied on control technologies

(fixed roofs with closed vents systems routed to carbon absorption units) as their method of compliance before reclassification and is required by an enforceable condition to continue to operate the same control technologies after reclassification. The source is also subject to Resource Conservation and Recovery Act (RCRA) regulation/permit requirements. The RCRA permit for this facility requires the source to control emissions by venting the tanks through closed vent systems to carbon adsorption units designed and operated to recover the organic vapors vented to them with an efficiency of 95 percent or greater by weight. The tanks shall be covered by a fixed roof and vented directly through the closed vent system to a control device. Therefore, we don't expect emissions increases due to the reclassification of this source.

- As for the lime manufacturing plant (Facility # 34 on Table 2 of Emission Analysis TSM), after reclassification this source remains subject to other regulatory obligations, including PM emission limitations, use of a baghouse, and monitored opacity as an operating limit with operation of a COMs. Because of the inherent scrubbing properties of lime and the requirements for the use of a baghouse, we don't expect emissions increases resulting from the reclassification of this facility.

The results of the analysis of these reclassifications show that three sources with NEI 2014 emissions above the major source thresholds took actions that reduced their emissions below what is required by their previously applicable major sources NESHAP and to below the major source thresholds in order to reclassify to area source status. The results also support the conclusion that the remaining 31 sources that reclassified from major to area source status since January 2018 will have no change in emissions.

Illustrative Analysis

In addition to the evaluation of the reclassification actions presented above, the EPA performed an illustrative assessment for six source categories: Wood Furniture Manufacturing Operations, Surface Coating of Metal Cans, Surface Coating of Miscellaneous Metal Parts and Products, Wet-Formed Fiberglass Mat Production, HCl Production, and Non-Gasoline OLD. The analysis of these six source categories is informative in some respects but is only illustrative and speculative in nature and can only present a range of possible outcomes that is dependent on the assumption that we made in the assessment. The following discussion summarizes the illustrative

emission impact analysis and results of it. The full discussion of the illustrative analysis, including the rationale for our key assumptions and assessments, is presented in the technical support memo for the emission analysis, which is available in the docket.

Consistent with the review and evaluation of the reclassification actions, the illustrative analysis focuses on whether sources in the evaluated source categories could adjust the types of add-on control equipment used to comply with the major source NESHAP requirements upon reclassification. The EPA considered two set of assumptions for the illustrative analysis. The first set of assumptions aligns with the findings of our permit review presented above in which sources continue to use the same compliance obligations before and after reclassification and add-on controls are not adjusted to decrease control efficiency after the source is reclassified. The second set of assumptions addresses sources that limits and use adjustable add-on controls, estimating possible emission impacts if these sources were allowed by their regulatory authority (*i.e.*, permitting authority) to change the operating parameters of the adjustable add-on controls after reclassifying.

To assess the potential for emission changes if sources taking HAP PTE limitations were to be allowed by their permitting authority to change the operating parameters of adjustable add-on control, we assumed the following:

- For a source category employing adjustable controls, emissions could potentially increase for all facilities with actual emissions below the 75 percent thresholds.
- For sources with only a single HAP reported in the NEI and an adjustable control, a potential increase in emissions was calculated as the difference between 7.5 tpy and the estimate of the single largest HAP. Otherwise, the potential emissions increase was estimated as the larger difference between 18.75 tpy and the estimate of total HAP emissions and between 7.5 tpy and the single HAP emissions.

For our illustrative assessment, we also considered whether other non-HAP regulatory requirements apply to the facilities that could potentially reclassify and increase emissions that would provide some level of control of HAP from the source/pollutants (*i.e.*, NSPS, control techniques guidelines, etc.) and the extent to which those other regulatory requirements would serve as a backstop that would prevent emission increases and whether area source NESHAP requirements would apply to a source that reclassifies.

Surface Coating Source Categories

1. Surface Coating of Miscellaneous Metal Parts and Products (40 CFR part 63 subpart MMMM)

- Pollutant regulated by the major source NESHAP: organic HAP.
- HAP that could be emitted from source category: xylenes, toluene, phenol, cresols/cresylic acid, glycol ethers, styrene and ethyl benzene.
- Subpart MMMM was promulgated in 2004 and amended in 2006. EPA is currently working on the RTR with a court-ordered promulgation date of March 2020.
- The technology basis of the major source NESHAP standard is low-HAP coatings for all subcategories (except magnet wire, for which the standard is based on the use of a catalytic oxidizer that is part of the curing oven and is integral to the process).
- These facilities are not subject to an NSPS, but they may be subject to state rules based on 1978 and 2008 CTGs. Facilities that are area sources may be subject to the area source NESHAP standard for paint stripping and miscellaneous surface coating operations (subpart HHHHHH).
- Based on our data, 371 facilities are subject to subpart MMMM. We estimate 285 facilities could obtain area source status at the 75% threshold.
 - EPA has reviewed the permits from 107 major source facilities; approximately 30% of these facilities have add-on controls.
 - If these facilities were to reclassify, the fact that they have either already re-engineered their coatings or use emission controls integral to their curing ovens supports the conclusion they will continue to use low-HAP coatings and controls to comply with any VOC coating limits.
 - Based on this review, we would expect no emissions increases from these facilities if they were to reclassify.
- We estimate 47 additional facilities have emissions between 75% and 125% of the major source thresholds and could potentially reclassify.
 - Based on this review, we would expect some emission decreases (160 tpy for combined HAP) from these facilities if they were to reclassify. However, the reclassification decision is not as clear-cut as it is for facilities that have emissions below 75% of the major source thresholds. Facilities with emissions at major source levels would have to weigh the costs of reducing emissions against the avoided costs associated with the major source NESHAP requirements when deciding whether to pursue reclassification. We examine this cost consideration in our analysis of the illustrative 125% threshold as applied to several source categories.

2. Wood Furniture Manufacturing Operations (40 CFR part 63 subpart JJ)

- Pollutants regulated by the major source NESHAP: volatile organic HAP (VOHAP) and formaldehyde.

- HAP that could be emitted from source category: toluene, xylene, methanol, methyl isobutyl ketone, glycol ethers and formaldehyde.
- Subpart JJ was promulgated in 1995 and amended in 1998. The RTR was promulgated in 2011.
- The technology basis of the major source NESHAP standard is low-HAP coatings and high-efficiency application methods. The RTR confirmed that most facilities are using low- and no-formaldehyde coatings and contact adhesives and found only one facility using an add-on control.
- These facilities are not subject to an NSPS, but they could be subject to state rules based on a 1996 Control Technology Guidance (CTG) document.³⁵ The CTG is used in the establishment of reasonably available control technology (RACT) for VOC for ozone nonattainment areas.
- In the RTR, we estimated that on average, 50% of all VOC is HAP.
- Based on emissions data, 333 facilities are subject to subpart JJ and 250 facilities could potentially reclassify to area source status at the 75% thresholds.
 - If these facilities were to reclassify, we expect they would continue the use of no-HAP/low-HAP coatings and high-efficiency application methods because they have already re-engineered their processes and need to continue using these measures to maintain area source status.
 - Based on this review, we would expect no emissions increases from these facilities if they were to reclassify.
- We estimate an additional 26 facilities have emissions between 75% and 125% of the major source thresholds (above 7.5 but below 12.5 tpy for one HAP and above 18.75 but below 31.25 tpy for combined HAP) and could potentially reclassify.
 - Some of these facilities may already be using low-HAP coatings but have high production volumes. Others may rely on formulations that contain a higher percentage of HAP due to product specifications.
 - Based on this review, we would expect some potential for emission decreases (125 tpy for combined HAP) if these facilities were to reclassify. As noted above, facilities will consider the costs to reduce emissions as part of their decision to reclassify. We examine this in our analysis of the illustrative 125% threshold as applied to several source categories.

3. Surface Coating of Metal Cans (40 CFR part 63 subpart KKKK)

- Pollutant regulated by the major source NESHAP: organic HAP.
 - HAP that could be emitted from source category: xylene, hexane, glycol ethers (other than EGBE), isophorone, ethyl benzene, formaldehyde, naphthalene, cumene and toluene.

³⁵ Control of Volatile Organic Compound Emissions from Wood Furniture Manufacturing Operations. EPA-453/R-96-007. April 1996.

- Subpart KKKK was promulgated in 2003 and amended in 2006. EPA is currently working on the RTR with a court-ordered promulgation date of March 13, 2020.
- The technology basis of the major source NESHAP standard is a combination of low-HAP coatings and add-on controls (e.g., thermal oxidizers).
- Some facilities may be subject to NSPS subpart WW (beverage can surface coating) and could be subject to state rules based on CTG.
- Based on our data, five facilities are subject to subpart KKKK, and one could obtain area source status at the 75% threshold.
 - Facility emissions: total HAP from NEI = 7.70 tpy; single HAP = 1.97 tpy.
 - Based on a permit review, the one facility that could obtain area source status at the 75% threshold uses thermal oxidizers to comply with subpart KKKK and is required to capture and control VOC separate from subpart KKKK requirements.
 - If the facility reclassified, the state requirement would necessitate it continue to operate the control technology as it has done in the past.
 - Based on this review, we would expect no emissions increases from these facilities if they were to reclassify.
- We estimate two additional facilities have emissions between 75% and 125% of the major source thresholds and could potentially reclassify.
 - Based on this review, we would expect some emission decreases (4 tpy for combined HAP) from these facilities if they were to reclassify. As noted above, facilities will consider the costs to reduce emissions as part of their decision to reclassify. We examine this in our analysis of the illustrative 125% threshold as applied to several source categories.

Heavy Industry Source Categories

4. Wet-Formed Fiberglass Mat Production (40 CFR part 63 subpart HHHH)

- Pollutant regulated by the major source NESHAP: formaldehyde (surrogate for total HAP emissions).
- HAP that could be emitted from source category: formaldehyde and methanol (present in some resins).
- Subpart HHHH was promulgated in 2002 and EPA promulgated the RTR on February 28, 2019.
- The technology basis of the major source NESHAP standard is the use of thermal oxidizers or similar controls (e.g., RTO, regenerative catalytic oxidizer) and the demonstration of compliance with the percent-reduction requirement (96% destruction efficiency of formaldehyde). Formaldehyde-free resins are used in limited applications.
- There are no individual state rules/NSPS/CTG that limit HAP from these sources, though some may be subject to state VOC limits.
- Based on our data, seven facilities are subject to subpart HHHH, and we estimate five could potentially reclassify to area source status at the 75% threshold.

- Consistent with the findings of our permit review presented above, under the first set of assumptions for our illustrative analysis, if these sources were to reclassify we could expect them to operate the add-on controls at the same control level as prior to reclassification, resulting in no potential increases in emissions due to the reclassification.
- Under the second set of assumptions for our illustrative analysis, we reviewed whether these five facilities could potentially be allowed to adjust the operating parameters to achieve less than 96% reduction of formaldehyde.
- Based on permit reviews, two facilities have permit requirements associated with VOC control. Because formaldehyde is a VOC, we assumed that if these two facilities were to reclassify, the state requirements would prevent any potential for changes to the operating parameters of the add-on controls. Based on this review, we would expect no emissions increases if these two facilities were to reclassify.
- Based on permit reviews, the other three facilities are not subject to other state rules limiting VOC or HAP emissions or that require operation and maintenance of an emission capture and control system. These sources demonstrate compliance with the percent-reduction NESHAP standard, indicating >96% control, and most of that level of control would be needed to maintain area source status.
- If these three facilities were to reclassify and the permit requires control of formaldehyde at a lower percentage reduction (less than 96% control), emissions could potentially increase (6.1 tpy for a single HAP or 32.5 tpy for combined HAP).
- We estimate there are no facilities with emissions between 75% and 125% of the major source thresholds, and we do not estimate any potential emission reductions from this category.

5. Hydrochloric Acid (HCl) Production (40 CFR part 63 subpart NNNNN)

- Pollutants regulated by the major source NESHAP: HCl and chlorine (Cl₂).
- Subpart NNNN was promulgated in 2003 and amended in 2006. EPA proposed the RTR in February 2019 and has a court-ordered promulgation date of March 13, 2020.
- The technology basis of the major source NESHAP standard is the use of caustic acid-gas scrubbers (99% reduction) on process vents, storage tanks, and transfer operations, plus the use of a site-specific leak detection and repair (LDAR) program.
- There are no individual state rules/NSPS that would otherwise limit HAP from these sources.
- Based on our data, 19 facilities are subject to subpart NNNNN. EPA estimates three could potentially reclassify to area source status at the 75% threshold.
 - Consistent with the findings of our permit review presented above, under the first set of assumptions for our illustrative analysis, if these sources were to reclassify we could expect them to operate the scrubbers to control emissions from HCl and Cl₂ at the same control level as prior to reclassification, resulting in no potential increases in emissions due to the reclassification.
 - Under the second set of assumptions for our illustrative analysis, we reviewed whether these five facilities could potentially be allowed to adjust the operating parameters to achieve less than 99% reduction of HCl and Cl₂.

- One facility has a permit limit on annual HCl emissions that is at least as stringent as the NESHAP, this state requirements would prevent any potential for changes to the operating parameters of the add-on controls. Based on this review, we would expect no emissions increases if this facility were to reclassify.
- Based on permit reviews, there are no other requirements for two facilities that would limit emissions or that require operation and maintenance of emission capture and control systems that could serve as backstops.
- If these three facilities were to reclassify and the permit required control of HCl and Cl₂ at a lower percentage reduction (less than 99% control), emissions could potentially increase (11 tpy for a single HAP or 27 tpy for combined HAP).
- We estimate two additional facilities have emissions between 75% and 125% of the major source thresholds.
 - Based on this review, we would expect some emission decreases (4 tpy for combined HAP) from these facilities if they were to reclassify. As noted above, facilities will consider the costs to reduce emissions as part of their decision to reclassify. We examine this in our analysis of the illustrative 125% threshold as applied to several source categories.

6. Organic Liquids Distribution (OLD Non-Gasoline) (40 CFR part 63 subpart EEEE)

- Pollutant regulated by the major source NESHAP: organic HAP.
 - HAP that could be emitted: benzene, ethylbenzene, toluene, vinyl chloride and xylenes.
- Subpart EEEE was promulgated in 2004 and amended in 2006 and 2008. EPA is currently working on the RTR with a court-ordered promulgation date of March 13, 2020.
- Emission sources controlled by the major source OLD NESHAP are storage tanks, transfer operations, transport vehicles while being loaded, and equipment leak components (valves, pumps, and sampling connections).
- The technology basis of the major source NESHAP standard for storage tanks is a floating roof or closed vent system and control device (combustion, scrubber or adsorber) with a 95% reduction; for transfer racks, it is a closed vent system and control device (combustion) with 98% destruction; for equipment leaks, it is an LDAR work practice; and for transport vehicles, it is a vapor tightness or vapor collection certification work practice.
- Based on our data, we estimate 178 facilities are subject to subpart EEEE.
 - Sixty-two OLD facilities are stand-alone and not co-located with other NESHAP sources. These are typically pipeline or marine terminals.
 - One hundred-sixteen OLD facilities are co-located with other NESHAP sources (e.g., HON, MON, MCM,³⁶ coating and printing, bulk gasoline distribution).
 - Fifty OLD facilities are also subject to NSPS 40 CFR part 60 subpart Kb (“Standards for Volatile Organic Liquid Storage Vessels, Including Petroleum Liquid Storage Vessels, for Which Construction, Reconstruction, or Modification

³⁶ HON = Hazardous Organic NESHAP (subparts F, G, H, and I), MON = Miscellaneous Organic NESHAP (subpart FFFF), and MCM = Miscellaneous Coatings Manufacturing NESHAP (subpart HHHHH).

Commenced After July 23, 1984.”) and some could also be subject to state or local VOC standards if located in ozone nonattainment areas.

- We estimate 89 OLD facilities could potentially obtain area source status at the 75% threshold. Of these, 41 are stand-alone OLD facilities and 18 are subject to NSPS subpart Kb.
- Consistent with the findings of our permit review presented above, under the first set of assumptions for our illustrative analysis, if these sources were to reclassify we could expect them to operate the combustion devices to control emissions from organic HAP from tanks and transfer racks at the same level as prior to reclassification, resulting in no potential increases in emissions due to the reclassification.
- Under the second set of assumptions for our illustrative analysis, we reviewed whether these 89 OLD facilities could potentially be allowed to adjust the operating parameters to achieve less than 98% destruction of organic HAP.
 - First, we determined which of these 89 OLD facilities are in ozone nonattainment areas. ERG then reviewed the permits for 15 of those OLD facilities located in ozone nonattainment areas that could reclassify to assess whether there are existing state rules or other permit conditions that could prevent the facility from increasing emissions if the facility obtained area source status.
 - Based on the permit review, at the 75% threshold seven facilities would not be expected to increase emissions because they are subject to state rules or permit requirements that directly or indirectly affect HAP emissions.
 - For the remaining 82 OLD facilities, if these facilities were to reclassify and the permit required organic HAP control at a lower percentage reduction (rather than 95-98% control), there could be a potential emissions increase of 1,140 tpy (for combined HAP).
 - If the NSPS Kb acted as a backstop for 22 facilities, the potential for emissions increases would be reduced to 913 tpy (for combined HAP), a difference of 227 tpy of HAP.
 - , 4% of HAP emissions in the NEI come from transfer racks and 17% from equipment leaks (21% combined), and these two sources, as well as wastewater operations, are not regulated by these NSPS. (In the NEI, 44% of emissions could not be assigned to a specific source.) At the 22 facilities subject to NSPS Kb, transfer racks and equipment leaks may represent about 48 tpy of the projected HAP increase, and this increase would not be prevented by subpart Kb.
 - Therefore, the potential HAP emissions increase could be slightly higher because there is no NSPS backstop on emissions from transfer racks, equipment leaks, or wastewater operations.
- We estimate 19 facilities have emissions between 75% and 125% of the major source thresholds.
 - Based on this review, we would expect some emission decreases (77 tpy for combined HAP) from these facilities if they were to reclassify. As noted above, facilities will consider the costs to reduce emissions as part of their decision to reclassify. We examine this in our analysis of the illustrative 125% threshold as applied to several source categories.

United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Air Economics Group
Research Triangle Park, NC

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